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D. M. Campbell, Editor A. T. Kinsley, Associate Editor

The Fight Against Foot-and-Mouth Disease

TWO bulletins of unusual interest and value to veterinarians have recently appeared. One is by Chas. Keane, Associate Chief of the Division of Animal Industry of the California department of agriculture and the other by John R. Mohler, Chief of the U. S. Bureau of Animal Industry. The California bulletin deals with the outbreak of foot-and-mouth disease in that state in 1924 and 1925. The U. S. bulletin deals with the California outbreak, and with the Texas outbreaks of 1924 and 1925.

The California bulletin stresses the effect of the outbreak on trade, commerce and industry; the federal bulletin deals chiefly with administrative details of the suppression of the outbreak and eradication of the disease. The California bulletin places the loss from the effects of quarantines as enormous. The federal bulletin says that, in comparison with the total value of the commerce of the region, the loss due to quarantines was not serious, probably not exceeding the direct loss due to slaughter of animals and destruction of infected property, or for California approximately $7,000,000.

The bulletins agree absolutely on two things: the importance of early recognition of the disease wherever it appears and the necessity for unified control of all measures adopted for its suppression.

Early Diagnosis Imperative

The spread of foot-and-mouth disease is in many respects comparable to the extension of a fire. There is no fire, however devastating, but at some time in its course may be extinguished by a single cup of water, and there has been no outbreak of foot-and-mouth disease in this country, but what at some time in its history, if recognized, could have been confined to the original premises on which it started. To cite but two of many instances that could be cited showing the high cost of delay:

The infection that conveyed the disease to Merced county and subsequently to the southern part of the state and to San Francisco county and the Stanislaus National forest was carried from Alameda county on the very day the disease was discovered. Its discovery two days earlier would probably have reduced the loss from the disease 75 per cent and the difficulty of its suppression about 99 per cent.

The failure of a practicing veterinarian, in central California, to recognize the disease in a herd of range cattle, although a number of animals were lame, and foot-and-mouth disease was known to exist in the state at the time, resulted in a tragedy to the livestock and business interests of Los Angeles county. His snap judgment of "gravel

lameness" permitted exposed cattle to be shipped to the Los Angeles, Stockton and San Francisco stockyards. In the Los Angeles area alone the loss amounted to 12,000 cattle and 8,000 hogs and included one of the most valuable Holstein herds in the United States. The cost of this blunder, direct and indirect, probably exceeded $2,000,000.

Delay in Notification Disastrous

In handling the fourth outbreak of foot-and-mouth disease in this country in a quarter century it is unthinkable that, after the discovery and recognition of the disease, there would be delay in the notification of the livestock sanitary authorities, yet such delay occurred in some instances in both California and Texas.

In one case in California a telephone message to a stockyards would have headed off a consignment of exposed cattle which could readily have been diverted and salvaged by slaughter. Instead a letter was written which was not received until after the cattle had been unloaded, and had infected the public stockyards.

In Texas the failure to adopt the speediest form of communication permitted one owner to cut out and throw on the range 51 stray cattle, found on his ranch, just 18 hours before his herd was found to be infected. These 51 stray cattle cost Texas a $100,000 and the federal government an even greater amount; since every contact animal on that open range at once became a potential spreader of the disease and had to be slaughtered. Along with this and the other instances of delay went a prolonged period of costly quarantines and multiplied indirect losses.

Unified Control Measures Essential

Although there was the most complete co-operation between the state and federal forces, this method of control of the outbreak was lacking in effectiveness in both instances where it was tried.

It requires a generalissimo with undivided, unhampered and unquestioned authority to successfully combat this, the most infective of all disease of animals or man.

In California, during slightly more than two months that dual control measures prevailed, the disease extended to a territory six hundred miles in length and, at the time, of unknown width. Naturally, one might almost say inevitably, confidence was lost by the livestock sanitary authorities of adjoining and even distant states in the measures being adopted for the control of the disease in California; and the state was confronted with quarantines either made, or in the making, by other states that would have been ruinous to many of the leading industries of the state. In the face of this calamity, at the request of the state authorities, the B. A. I. took over complete control. Only one disastrous extension of the disease to new territory occurred afterwards, and an abatement of the rigid quarantines of other states took place.

In contrast with this experience in California and as a result of it, three days after the discovery of the first outbreak in Texas the federal bureau, at the request of the governor, assumed full control of all suppression and eradication measures. Within 30 days from the discovery of the disease it was completely eradicated from Texas.

The recurrences of the disease illustrate even more forcibly the advantages of unified control. Of the 702 premises on which the disease appeared in California it reappeared after disinfection on two premises, but in both instances was promptly suppressed without extension.

Of the 11 premises infected in the first Texas outbreak, the disease recurred after disinfection on one, and, as it happened, in the identical pasture where it originally broke out in that state. In the 10 months that had elapsed since the first outbreak in Texas, the state administration had changed, and co-operative measures, with dual state and federal control, were at first adopted in the second outbreak. In this outbreak 152 additional herds were infected, contrasted with only 10 in the first outbreak in Texas and with none in the two recurrences in California. After twice the period had

elapsed that was required to suppress the first Texas outbreak, unified control was adopted in the second outbreak, following which only one new herd was infected. Perhaps the greater success attending eradications under unified control was in some measure a coincidence and not wholly attributable to such control, nevertheless, cooperative management, however sincere, seems to lack something in efficiency when pitted against a major emergency such as foot-and-mouth disease constitutes.

Cost

The indirect cost of an outbreak of foot-and-mouth disease cannot be calculated accurately. It is almost sure to exceed the direct cost and may, as in the 1914-15 outbreak, exceed it many fold.

The appraised value of the 109,766 animals slaughtered, the property destroyed and burial and other expenses incurred, ran the direct cost of the California outbreak up to $7,000,000. In Texas 8,569 animals of an appraised value of $325,000 were slaughtered in the first outbreak, and 23,349 animals of an appraised value of $654,000 in the second outbreak. This, with the incidental expense, ran the cost above a million dollars, exclusive of salaries paid regular federal employes.

The foregoing figures take no account of more than 22,000 wild deer that were killed to further the eradication of the disease in the Stanislaus National Forest, nor of some animals voluntarily slaughtered by their owners, without waiting for appraisal.

The Slaughter Method a Desperate Procedure

The arbitrary slaughter of infected and exposed animals, as a means of suppressing outbreaks of foot-and-mouth disease, is a very radical procedure, but the results have amply justified it—would have justified it had its cost been ten times as great. However, if we may have another surcease of a few years from invasions of this epizootic, it is fairly possible that we may have seen the last of the indiscriminate slaughter and burial as a means of suppressing outbreaks. A number of recent discoveries seem to point in this direction.

The success of the quarantine in California, in limiting the epizootic to certain areas within which it existed for considerable periods without extension to other counties, would seem to make possible the salvage of exposed animals at abattoirs within quarantined areas or near them. This was accomplished in two public stockyards in California at a saving of a quarter of a million dollars. This method was applied successfully to a limited extent in the 1914 outbreak. The authorities are alive to its possibilities but at the same time aware of its hazards. With some further scientific developments it may be feasible to salvage many or all exposed animals in a quarantined area, within which there is adequate packing facilities.

The success of limiting the outbreak to two, of about 50, units on the Fontana Farms Company premises, is a striking illustration of the possibility of saving animals on infected premises. The disease broke out in one unit on this place where there were 40,000 garbage fed hogs. The disease was limited to this unit containing 760 hogs and to one other unit containing approximately the same number of animals, to which it was spread through an error of an employe. This deviation from the rule avoided a loss of nearly half a million dollars, but might almost be said to be a freak result. The encouragement that it offers unfortunately is offset by many failures under similar conditions.

The success in removing 40,000 head of cattle from uninfected ranges in the Stanislaus National Forest after infection was known to exist on other ranges in the forest with the loss of but few animals is an exemplification of the fact that under some circumstances it is possible to maintain an effective quarantine by patrolling and natural barriers even without fences.

The history of the earliest outbreak of foot-and-mouth disease in England occurred in 1839, probably as early as May. It attracted little attention until the following winter. In the early months of 1840 it was

almost universally distributed over England and Scotland. In that year Professor Dick personally attended upwards of 15,000 affected animals and reported that in many districts the disease had affected "nearly if not quite one hundred per cent of the cattle, sheep and swine." By 1841 the disease was far less prevalent and during 1842, disappeared from those countries. The loss from the disease was estimated at 30 per cent of the value of dairy animals and 5 per cent of the value of other animals affected, which represented practically all the cattle in the island.

Contrasted with this experience the continuous existence of foot-and-mouth disease in most European countries; and the very expensive and as yet unsuccessful struggle of the British authorities, ever since the World War, to eradicate the disease from England and Scotland is a striking illustration of the effects of developed transportation and extended commerce since 1839 on the course of this disease.

But perhaps the greatest hope for an amelioration of the indiscriminate slaughter method of handling outbreaks of foot-and-mouth disease without loss of effectiveness lies in the research work on this disease now being carried on in Central Europe and elsewhere. The Riems serum, the use of which is described elsewhere in this issue, it appears, has enabled susceptible animals to be added to infected herds within three weeks of the first appearance of the disease with entire safety. Already this serum would appear to offer a safe means of preserving herds of such unusual value as the Hartsook herd of Holsteins in southern California, probably the most valuable herd of that breed in existence.

The discovery of the great efficiency of a 5 per cent solution of sulphurous acid in destroying the virus of foot-and-mouth disease may still further reduce the very small percentage of cases in which the virus survives the type of disinfection of premises heretofore used; and may permit restocking of infected premises sooner than has been the rule in the past, thus shortening the period of quarantine and reducing the loss therefrom.

Some Lessons of the Outbreak

1. That in the main practicing veterinarians must be depended upon for the discovery of this disease when outbreaks occur.

2. That it may appear at any time in any place and that practitioners should report to the live stock sanitary officials all "suspicious" cases with the greatest promptitude.

3. That no criticism is incurred by anyone in reporting a suspected case, that later is determined to be some other ailment; but that failure to report or delay in reporting an actual case, because of a doubt as to the diagnosis, is a calamity.

4. That the elaborate preparation for handling an outbreak of this disease made by the U. S. Bureau of Animal Industry, following the suppression of the 1914-15 outbreak, was of incalculable value and contributed greatly to the promptness with which the machinery for the suppression of the recent outbreaks was put in motion.

5. That, in the federal Bureau of Animal Industry, the United States has a highly trained, fully organized, thoroughly experienced and wholly competent force, capable of suppressing any outbreak of this disease that is likely to occur.

6. That states in which outbreaks of foot-and-mouth disease occur will save themselves very great loss, from drastic quarantine regulations of other states, by placing the control of all measures against the disease in the hands of the federal bureau immediately upon discovery of the disease.

A Tribute to the Workers

The following from the official report of the California department of agriculture is a comment justified by the conduct of the campaign against this plague:

"That the epizootic was brought under control within a few months after its discovery, and finally eradicated in the face of such unusual conditions is a feat that stands without a parallel in the history of livestock sanitation."

Diseases of Horses and Mules Incident to Shipping

By A. T. KINSLEY

THERE has been a reduction of horse and mule production for the last few years for various reasons. However, it is evident that there is an increased interest in the breeding of horses and mules at the present time from the numerous inquiries relative to breeding stock.

The purchase of breeding stock and the shifting of horses and mules to those areas in which there is a demand for stallions, jacks, brood mares, work horses and mules will result in the spread of the various infections incident to shipping. Because the health of horses and mules on farms has a direct relationship to the health of those that pass through public markets. The greater the traffic in horses and mules the larger the percentage of loss from infectious diseases and the greater the danger of widespread outbreaks of diseases among country animals.

A classification of these diseases is difficult and the following grouping based upon the causative factor is used for convenience.

Equine Influenza

This is an acute infective disease probably caused by a filterable virus and characterized by sudden onset, inappetence, high temperature, marked depression, cellulitis, stocking and rapid emaciation. Abscesses may or may not occur, but suppuration is not associated with the primary cause of influenza.

Streptococcic Infection

Strangles is caused by the streptococcus equi, primarily affects the young animal and is characterized by abscess formation, particularly in the submaxillary region. This condition is usually not fatal, but there is loss of condition and inability to work.

Pneumonia of streptococcic origin is of rather common occurrence. This malady is characterized by sudden onset, high temperature, dyspnea, great depression and a high mortality. Streptococcic pneumonia may be associated with strangles and is commonly associated with hemorrhagic septicemia.

Catarrh, an inflammatory condition affecting the upper air passages, is a relatively common condition that is usually designated suppurative catarrh, catarrhal or shipping fever. This condition is usually caused by the streptococcus equi, although other streptococci are important factors in some outbreaks. Suppurative catarrh is characterized by slight elevation of temperature, profuse nasal discharge, cough, conjunctivitis and loss of condition. The percentage of fatalities is rather low, unless complications arise.

Hemorrhagic Septicemia

Hemorrhagic septicemia is a specific infection caused by the B. bipolaris. This disease in equines is peracute or acute and is manifested by a sudden onset, rapid course and high mortality. The B. bipolaris frequently occurs as a complication of streptococcic infection, particularly in those cases of pleuro-pneumonia in which there is an extensive pleuritic exudate. Uncomplicated hemorrhagic septicemia consists of hemorrhages, petechial or ecchymotic on the heart, pleura and lymph glands.

Control Measures

Any one of the foregoing equine maladies are not only of considerable economic importance when they occur in public markets because the affected animals are unsalable, but they are also of great economic importance when the affect farm animals because of their inability to do service.

Proper care, quarantine and the instituting

of sanitary measures, particularly the frequent and thorough cleaning of barns, feed and water troughs, provision of fresh air and sunshine, and cleaning of cars in which animals are shipped are of value.

Quarantine and sanitation alone do not suffice to control these infections, but these measures supplemented with immunization have given results. Strangles is a specific streptococcic infection that can be prevented by Streptococcus Bacterin Equine.

Suppurative catarrh and streptococcic pneumonia, uncomplicated, are successfully prevented by the use of killed cultures of streptococci, however, these infections are frequently complicated with hemorrhagic septicemia and it is advisable to use a bacterin composed of streptococci and B. bipolaris. These products are, according to many practitioners, of value as a curative agent when used in large doses and given intravenously.

Medicinal treatment should also be resorted to, the drugs used depending upon the symptoms.

ANNUAL REPORT U. S. LIVE STOCK SANITARY ASSOCIATION

A welcome innovation on the part of the U. S. Live Stock Sanitary Association and of the *Journal of the American Veterinary Medical Association* is the publication of the report of the 30th annual meeting of the live stock association held in Chicago, December 1-3, 1926, in the March issue of the JOURNAL.

The report comprises 264 printed pages, and includes all papers and committee reports presented at the meeting, with the discussions from the floor and a record of the proceedings making an unusually valuable volume.

We have repeatedly urged all readers of this magazine to join the A. V. M. A., attend its meetings and obtain its official journal, or as an alternative, to subscribe for the Journal of the A. V. M. A. and thus obtain the major benefits of the association.

We have repeatedly urged our readers to join the U. S. Live Stock Sanitary Association and obtain its reports. While the writer was secretary of that association, he was instrumental in inducing nearly 500 to do so.

As a scarcely less desirable alternative to joining the U. S. L. S. S. A., we have urged readers to procure its annual reports because of the great value to them of the research work annually reported at meetings of that association.

We now reiterate the foregoing recommendations and add a fifth. Those who have not acted favorably on any of these recommendations, are urged to procure the March copy of the JOURNAL of the A. V. M. A. The address is: 716 Book Bldg., Detroit, Mich. The price for this copy is $1.00.

BOOK REVIEWS

The Common Colics of the Horse, by H. Caulton Reeks, F.R.C.V.S., 4th edition, 403 pages, 32 illustrations; price $3.00. Published by Alex. Eger, 9 S. Clinton St., Chicago.

Twenty-five years ago, the first edition of this work appeared. Its publication was epochal. Colics of the horse at that time, made up a very large part of the practice of the average veterinarian and anything that contributed to the available information on the subject, was of necessity, of outstanding importance. This work advocated stimulant treatment for colics and was responsible for the almost universal adoption of that line of treatment with marked improvement in the outcome. Excepting only the wide adoption of gastric lavage which came about a decade later, the change from the sedative to the stimulant line of treatment for colics marked the greatest improvement made in the treatment of that ailment.

The stimulus to the study of colics, that Mr. Reek's writings have constituted, can be realized only by an examination of veterinary periodicals before and after the publication of his book on the subject.

The *American Veterinary Review* for 1901, (the year before the first edition appeared) comprised 1,046 pages. It contained one article by an American writer on indigestion in the horse, and two references to the subject in the review of English veterinary literature. *The Veterinarian* for 1860 comprised 746 printed pages and contained four reports of cases of ruptured stomach in the horse, but no other discussion of intestinal ailments. The same publication for 1840 contained 816 pages with one reference to bowel stricture and one to spasmodic colic. In his preface to the first edition, of "Common Colics of the Horse," Mr. Reeks deplores the scarcity of literature on the subject. Within a few years after the publication of his book, there was scarcely a veterinary meeting held in America that did not list intestinal ailments of the horse as an important subject for discussion. Veterinary periodicals of those years contained from one to many discussions of the subject in nearly every issue.

In the fourth edition, the discussion of obstruction of the small intestines is much elaborated compared with what was given in the 1914 edition. More attention is given to the role of bacteria in intestinal ailments, a like addition to the discussion of autotoxemia is included in new edition which includes also a far more complete discussion of the subject of cecal impaction.

Transfusion of Blood, by Henry M. Feinblatt, M. D., 137 pages; 24 illustrations; Price $3.00. Published by The Macmillan Company, 60 Fifth Avenue, New York.

In this volume, Dr. Feinblatt has presented a critical survey of the subject of blood transfusion. The text is so arranged that each chapter becomes a ready reference on the several phases of the subject.

Now that blood transfusion has become a recognized treatment for navil ill in foals, and for scour in pigs and calves; and is the only known treatment of any value in the hemorrhages in cattle due to feeding on sweet clover hay, or for the hemorrhages following surgical operations on cattle feeding on sweet clover pasture; veterinarians are in need of a work on the technic of blood transfusion. Dr. Feinblatt's work meets this need and is of value to every veterinary practitioner.

MORE ON THE HUMOROUS SIDE OF VETERINARY PRACTICE

In the March issue of Veterinary Medicine, I notice an invitation to relate humorous incidents in our veterinary experiences. Dr. Mayo relates a good one. If it were not for the fact that we possess a sense of humor, we fear that at times our morale would be rather low. We can relate the following incident which occurred about two years ago, and from which we have derived many a "kick" not only by reflecting on it, but by telling it to others.

The circumstances follow. Just before Christmas, two years ago, an old lady (nearly eighty) came into our office with a small fox terrier pup under her arm, and stated that she wished to have it castrated. We advised her to leave it and return the following day to get it. She objected to this procedure, stating that she lived alone with her dog and that it occupied part of her bed at night, and she would like to have the operation performed immediately.

We complied with her request, and performed the operation at once, using a local anesthetic. We delivered the dog to her in the waiting room, minus the offending glands, upon which she opened her purse and asked what the charges were. Since she was a poor widow, and being saturated with the Christmas spirit, we told her that the charges were nothing and that she could consider that as a Christmas gift. She was very profuse in her thanks and picking up the pup, approached the door, but before closing, she delivered this final offer: "I want to thank you again and I hope I may be able to do as much for you some day."

About two weeks ago, the dear old lady passed to her reward, and we shall not get the opportunity to accept her offer.

New Philadelphia, Ohio. H. A. Salt.

The Supply of Veterinary Students and of Veterinarians in the Near Future*

By M. H. REYNOLDS, University Farm, Minn.

Attendance

DEAN WHITE of Ohio has been compiling careful records of veterinary school attendance for the United States and Canada for many years. He has kindly sent us a copy of his latest table covering the period 1919 to 1927. This table shows the following:

We have deducted total special students for all schools from total attendance in order to get the following figures. This data is for twelve veterinary colleges and counts only regular full course under graduates and excluding special students.

For 1919 to 1920	759
For 1920 to 1921	678
For 1921 to 1922	622
For 1922 to 1923	618
For 1923 to 1924	573
For 1924 to 1925	575
For 1925 to 1926	570
For 1926 to 1927	598

During the past year the only schools which have shown definite increases, are Iowa, from 90 to 105, New York, 88 to 96, Pennsylvania, 57 to 62. Material actual decreases are shown by none. The figures show a decrease of 21.2% from 1919 to 1926.

Medical Student Statistics

There were 18,200 medical students enrolled in the 80 medical colleges of this country last year, as against 12,930 in 1919. This is an increase of almost a thousand students per year during this six-year period. The number of colleges has remained substantially the same. From these colleges, there were 3,974 graduates during the year which ended June 30, 1925. This was the largest number since 1913. Seventy-one colleges are rated as Class A, three as Class B, and six as Class C. The average number of students in the Classes B and C schools was 78, while the average enrollment in the Class A schools was 246. Jefferson Medical College had the largest enrollment, with 573 students; Michigan 533; Rush 531; Harvard 506; Tufts 476; and Pennsylvania 471.

The Medical College of our own State University had a similar experience. Actual enrollment was as follows:

1914-15	222
1920-21	411
1924-25	583
approximate desirable limit.	
1926-27	597
at close of the 1st quarter.	

An increase 1920-26 of 45.2%.

For the total eighty American Medical Colleges during the year 1919-1920 to 1925-1926, there was an increase of 40.8%. For these same years our veterinary schools show a decrease in attendance of 21.2%, an actual spread of 62%.

The contrast is far more striking than these figures indicate. Note the following data for applications and matriculations at the medical school, University of Minnesota:

1924, applications 190, accepted 105
1925, applications 237, accepted 100
1926, applications 230, accepted 100

Examinations during the earlier years are made very severe and only the best students are still in for the junior and senior medical years. The mortality is

* Report of the Committee on Colleges of the Minnesota Veterinary Medical Association, by A. O. Rustad, B. M. Bolstad and M. H. Reynolds, chairman.

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heavy and thus facilities are not too much overtaxed.

It is safe to presume that our veterinary schools are not culling applicants and students with undue severity.

Attendance in agricultural colleges might very reasonably be expected to parallel attendance in veterinary schools rather closely. Let us see. White students taking agriculture, forestry, and veterinary studies numbered as follows by 5 year periods:

1914-1915	17,169
1919-1920	15,370
1924-1925	13,206

Total decrease 1914-1924—3,963 students or 23%. For the 5 year period 1919-1924 this attendance in agricultural colleges decreased 14.1% whereas veterinary school attendance decreased 24.2% and medical schools gained 40.8% during 1919-1925.

For our American theological schools, complete figures for all schools are not available, but the Chicago Theological Seminary and the McCormick Theological Seminary may be taken as fairly representative, not as to exact percentages but as to general trend.

Combining these two schools we have:

1919	224 students
1924	298
1925	312
1926	334

with rather steady consecutive increases shown by the intervening years. From 1919 to 1926 there was an increase of 49.1%. During the same years veterinary students decreased 21.2%, a spread of 70.3%.

Britain's Naval Service

The English Review (London) says bluntly that the naval service, regarded as a profession, is "rather under a cloud." As to the difficulty in obtaining the right class of young officers, the Review observes:

"The prospects are not good. For the first twenty years of his service the youngster who enters through Dartmouth has a full, active life, and gets the finest training in the world. Then he sees before him that perilous chasm of selection which divides the lieutenant-commander from the rank of commander. If that chasm be not crossed at the right moment and four-fifths of the young officers do not cross it, the end of a career is in sight. It is this uncertainty in the prospects of the naval officer that is affecting the schools. Not long since the headmasters of the public schools were consulted by the Admiralty about their supply of candidates for entry to the Naval College at Dartmouth. The headmasters were not encouraging. They pointed out that a profession which, for four out of every five entrants, culminates at the age of thirty-five, and involves retirement at forty-five, would not appeal to the parents of bright public school boys."

Instruction

Regular Courses—The New York State Veterinary College offers facilities for advanced work and research with the regular veterinary classes, also a seven year combined course in agriculture and veterinary medicine, giving in addition to the veterinary degree a B.S. For the year 1924-25 the school had seven graduate students and two in the practitioner's courses.

A letter from Dr. R. R. Dykstra, Dean of the veterinary school, Kansas State Agricultural College, informs us that they have completed the preparation of a six year course in general science and veterinary medicine; students to receive a degree of B.S., at the end of four years and at the end of six years the degree of D.V.M. They are already offering a six-year course in animal husbandry and veterinary medicine, leading to the same two degrees at corresponding periods of study.

In their combined course animal husbandry and veterinary medicine, the 5th and 6th years coincide with the junior and senior years in the four-year course: the first year being the same as the freshman year of the curriculum in agricul-

ture. They offer courses for graduates and under graduates in special anatomy, applied anatomy, physiology, comparative physiology and four courses in pathology.

The Division of Veterinary Medicine, Iowa State College offers, in addition to the regular four-year course, a six-year combined course in animal husbandry and veterinary medicine, and a six-year combined course in science and veterinary medicine, with the additional degree of B.S. This school also offers a practitioner's short course. The University of Pennsylvania offers this year special courses on diseases of small animals; six in attendance, and diseases of poultry with none in attendance.

Practitioners' Courses.—A letter from Dr. V. A. Moore tells us concerning their practitioners' course at Cornell that it is quite elastic. Practitioners may enter at any time, stay as long as they choose, and select their own courses. They stay from two or three weeks to as many months. In response to a question as to how conferences should differ from an ordinary veterinary association meeting, Dr. Moore calls attention to the fact that facilities and opportunities abound at a veterinary school for getting special information from specialists, or for pursuing special studies in which the practitioners may be interested, and that work, which may be called fundamental instruction, can be given more efficiently at an educational institution than at an association meeting.

Dr. G. H. Glover, head of the veterinary school of the Colorado Agricultural College, gives his view as to the points in which a short course at a veterinary school, should differ from a veterinary association program. This is to the effect that the short course should consist mostly of lectures and demonstrations with exchange of experiences and opinions, and that this should be quite different from an association program where a wider range of subjects are dealt with by technical papers and discussions.

Graduate Courses.—The University of Pennsylvania in a preliminary announcement of graduate courses for 1926, gives notice that students taking these courses may spend from one to four months studying the problems in which they are especially interested. The more important of these courses are as follows: Advanced pathology, general pathology, special pathology, veterinary bacteriology, special surgery, obstetrics and advanced studies in canine and feline diseases. The fee is $25.00 per course.

The school of veterinary medicine, University of Pennsylvania offers in addition to the regular veterinary course to graduates of approved veterinary and approved medical schools, graduate courses in anatomy, physiology, pharmacology and therapeutics, pathology and bacteriology, surgery, obstetrics, diseases of small animals, medicine, meat and milk hygiene. Two men were taking graduate courses in pathology and bacteriology.

Cornell provisions for graduate study are on the same basis as other graduate work of the university. I understand at the present, Cornell has eight graduate students. It would be readily understood that a great university like Cornell would be in a position to offer graduate work leading to advanced degrees in many branches of science relating to veterinary medicine. Michigan reports eight veterinarians doing graduate work toward advanced degrees. Other schools may be offering true graduate work but did not report it excepting Iowa, as noted later.

Improvements

In looking over the last Ontario Veterinary College calendar, I note some interesting suggestions. It may not be out of place to make a very brief mention of certain points in the history of this old school, which has done so much for western veterinary medicine and animal husbandry. In 1908 the interests of Prof. Andrew Smith were acquired by the Province of Ontario, the school thus becoming a public institution. In 1919 the Provincial Act was amended in such a way that it resulted in affiliation with the

University of Toronto, the degree thereafter being conferred by the university. Later a change was found advisable and new college buildings were begun in 1921 at Guelph, the school thus becoming an integral part of the Ontario Agricultural College and under the minister of agriculture. In the cirriculum we note a certain item which appeared very desirable, and so far as we know rather unique in veterinary curricula. This is a course beginning with composition the first year, public speaking the second year and journalism the third year; the course in journalism taking up a study of written articles, technical reports, bulletin reports and a study of modern publicity methods.

Principal McGillivray writes that they put on last year a short course for practitioners a program of which he enclosed. This program is closely similar to what we have in our various states, and does not differ very essentially from a veterinary association program.

The Texas Agricultural and Mechanical College also reports a six-year combination animal husbandry and veterinary medicine course operating this year for the first time.

In Ohio

Dr. D. S. White, speaking for Ohio, made some interesting comments in his unique style. These are to the effect that during the past five years they have had no new buildings or important equipment or additions to the teaching staff, and that this means something of a drift down stream. The only definitely forward movements reported has been a three-day conference which attracted over 250 veterinarians, and which will hereafter be an annual event. The legislature is being asked for an appropriation of $4,000 for the support of this conference. Dr. White expresses the opinion that a practitioner's course should run definitely as a school rather than meeting. Their veterinarians in attendance are supplied with pencils and note books. There is no display of instruments, drugs or biologics; practically every man attended the lectures and took notes freely. He suggests that association meetings are surrounded by an atmosphere of politics and that even in the A. V. M. A., we are as yet more interested in the two questions of the next president and the next place of meeting, than in framing policies and doing the bigger things for the profession.

Michigan

The Michigan state college reports no new buildings, but a project on hand which they hope may come before the next legislature for $400,000 to complete the veterinary quadrangle. This would involve buildings for anatomy, physiology, bacteriology and pathology. They have had the promise of 40 acres for an experimental farm on which they hope to put laboratories and stables. Dr. Ward Giltner reports that their post graduate courses will evidently be permanent. It should be noted that many of the courses reported as post graduate are post graduate only in the sense that they are for graduates. However, Michigan is doing considerable real graduate work leading to advanced degrees, and has eight veterinarians now working for such advanced degrees. He also reports a new $600,000 chemistry building on the campus which is of important interest for the veterinary school.

In the Northwest

Dr. E. E. Wegner for Washington, reports no noticeable changes for several years except the installation of a half-ton refrigerating machine for the department of anatomy and bacteriology where materials can be kept for weeks at a time if necessary. The large cold room for dissection of specimens is considered a very important piece of equipment and they are wondering how they got along without it. Dr. Wegner suggests that a short course should differ from an association program rather distinctly. He does not specify very clearly what these distinctions are, excepting that the short course program is built around notable speakers

and he feels that more serious attention is given to the work.

Iowa

Dr. C. H. Stange reporting for Iowa tells us that they have planned a new clinic plant with a special view to work with food-producing animals, but including all classes of livestock, and pet animals. One cattle wing of the building is already completed. Two new buildings have been erected for the research department at the veterinary farm. They expect to ask the coming legislature for a new laboratory building and some additional animal buildings for their experimental farm. Their practitioners courses have consisted rather largely of clinics.

Concerning the distinction between veterinary short courses and association programs, Dr. Stange expresses the opinion that association programs cover a number of subjects, and usually in a rather general way, whereas a practitioner's course should concentrate on a subject of great importance, and should include the fundamentals underlying that work.

The Alabama school reports a new surgical and clinical building, and their prospectus shows a modern slaughter house, operated throughout the year, providing meat for the town of Auburn, and for the college, and also providing opportunities for training in meat inspection.

Veterinary Prestige Abroad

Veterinary Medicine Abroad: Dr. H. Jensen in reporting a trip to Denmark during which he attended dedication of the new buildings at the Royal Danish Veterinary College, reports some very interesting items and describes the new buildings as magnificent. At the dedication exercises, every seat in a large auditorium was filled and the attendance included visitors from 18 different countries and King Christian. He says that the scholarly president of this college presided at the dedication exercises, and extended a welcome in six different languages. It is interesting to note that many of the veterinary colleagues in attendance were covered with order recorations from their various governments in token of appreciation for valuable services. It would be very helpful to the American veterinary profession, if we had such recognition as this. Why do they and why do we not?

Dr. H. J. Stafseth made an interesting report sometime ago concerning veterinary education and practice in Scandinavia, which is well worthy of careful study by those interested in American veterinary problems. Requirements in the way of preparatory work for the veterinary school are essentially the same as for the State University: prescribed courses in common school seven years, high school four years, and gymnasium three years. Subjects taken up in these schools do not differ materially from similar schools in the United States. It appears that in Norway, the veterinary profession is very generally recognized as to its public impotance, and that a very desirable class of young men enter the profession in that country. With a population of less than 3,000,000 Norway was maintaining an attendance of over 60 students in veterinary schools of foreign countries. He reports a very interesting plan organized for the purpose of giving fairly equal remuneration to veterinarians practicing under different conditions, so that the entire agricultural population may be supplied with veterinary service. The country is divided into districts of various classes, somewhat according to conditions for travel and density of animal population.

The public salary which the district veterinarian receives, depends upon the classification of his district, and I take it that this really depends upon the amount which he can reasonably expect to earn from other sources. This salary is not supposed to reimburse for acutal service, but serves as a retaining fee. At certain intervals of years, veterinarians in this service receive increases in salary accord-

ing to a definite scale up to a maximum, and all veterinarians in civil and military service contribute a percentage of these salaries to a state pension fund—state medicine to a certain extent. The work of these district veterinarians covers according to class and location, food inspection, infectious disease control, etc. Private practitioners are located only in the larger cities, and occasionally in the richer agricultural sections; especially where the district veterinarian is getting old and needs help. He reports that Scandinavia has no system of license examinations. Graduation from a recognized school is the guaranty of proficiency. All final examinations are given by the National Bureau of Education.

Comments

Consideration of the present situation and future developments may not be out of order because these directly involve our schools. An eminent editor insists that before we can look backward with pride, we must be able to look forward with vision.

Attendance at our veterinary schools depends on what there is in it as compared with other lines financially and socially, in proportion to cost, and cost includes money, time, exposure and unpleasantnesses in general. High matriculation requirements and long courses are very desirable, but these call for heavy investment at fair returns or young men will not continue to invest.

Just now and during the past few years there have been unsual opportunities in human medicine for young men of ability, because there is so much that is new and rapidly becoming necessary, which the older men in practice did not have, and can get only through young men who have had it. Hence it occurs that in hospitals and clinics and in junior partnerships, there are unusual opportunities for well trained young physicians. Young men are flocking to the medical schools, and these schools are crowded in spite of the long and expensive courses, because the relative returns socially and financially are attractive. Hence we find an increase of 40.8% in medical schools and a decrease of 21.2% in our own schools during the same years.

Our previous discussion shows a very marked increase in attendance at two of our best known theological schools—an increase of 49.1% for the same years when our students decreased 21.2%. Well—during these years there was a marked increase in pastors' salaries. Many churches doubled salaries, with an estimated total average increase of 30%; many churches provided their minister's residence and our larger denominations have been raising endowment funds, running into the millions to provide for needy ministers and their widows in old age. The answer is evident—total relative investment balanced against total returns wins when the balance is favorable.

Young men will not continue to attend veterinary schools in considerable numbers when they see other young men doing better in other lines, composite investments and receipts considered. There must be a smaller investment or better returns or other avenues must become relatively less inducive or there will be no great change in student attendance. If improvement in agricultural prosperity alone brings inviting returns to practicing veterinarians, then our schools will fill up again. Just a question of what there is in it. There will be no satisfactory veterinary practice without reasonable relative profits; no profitable animal husbandry without adequate veterinary service; no profitable agriculture without profitable animal husbandry and profitable agriculture is an absolute necessity. There can be no question as to a good future for veterinary service; but what will happen in the meantime, and what readjustments there may be, are decidedly problematical and closely related of course to agricultural readjustments. Veterinary practice must in general go up or down with animal husbandry. Both profit when good serum is properly used at fair prices, so far as that transaction only is concerned, but heavy

hog cholera losses for example are not to the veterinarian's ultimate general gain. He cannot profit at the expense of animal husbandry in the long run. He must profit with animal husbandry.

It is the long average through a term of years that measures success in business. Good veterinary returns from the present hog cholera outbreak, plus those from area work, may be expected to start an increased number of young men toward our schools. Whether it continues in the same or increased volume, obviously depends on what there is to make it do so.

Hugh Farrel, editor of the New York Commercial and author of important works in industrial economics, challenges his readers to point to any important industry that is in worse shape than bituminous coal and then says, "Everybody knows that the bituminous coal industry is over developed, so is the oil industry, so is farming, so are tens—perhaps a hundred other industries over developed and over development is an economic crime."

Agricultural economists seem to feel that we have too many farmers producing too much now and that with demand limited by consumption, we are dividing the total profits of American agriculture, among too many families. But when we compare total veterinarians, with total domestic animals and total valuations, it is difficult to believe that America is over supplied with competent veterinary service. If there is anything wrong, there must be other factors. Over which of these if any have we any control? Well, most successful business concerns are studying the necessity of lower cost and increased volume of business and they are doing this by constant study, expensive study of cheaper production and extended markets. They are spending vast sums of money to get public good will and to sell their proposition to the public. Could the veterinary profession lessen cost by similar study of cost items, such as convenience, comfort, economical buying and studying of better and better business methods, by knowing definitely what lines pay composite cost and returns considered and which do not? Could our professional returns be increased by definitely working for public good will like Swift or Standard Oil are doing and by extending the veterinarian's market as they do? Would a continued campaign for hog cholera immunization as wise insurance after the present outbreak has subsided, or one for clean milk from tested cows, as child insurance, serve to extend our market and thus induce fine young men to attend veterinary schools? Could the profession increase its returns socially by dress, manner, general culture and social activity? Our dress and homes compare favorably and are creditable. Our offices do not in general contribute a great deal. Such study of cost and returns might conceivably add to net returns and the returns are the inducements. Investment in the way of discomforts might be decreased by more convenient facilities and better business methods, and if the practitioner's relative investment can be decreased and returns increased, we will have more students in our schools even with agriculture remaining at its present level. Someone may say its all very well for college professors and veterinary editors to talk, but they do not have to wade around in dirty stables. That has nothing to do with the logic of the case. Bald headed facts are still facts, after all the hasty comments are in. We get nowhere by kidding ourselves and saying that everything is lovely and we cannot help it if it isn't. That is both blind and flabby. The bald headed facts remain that there must be less *relative* composite investment or greater *relative* returns or both, or little increase in veterinary student attendance. But little can be accomplished merely by deans and editors convincing young men and their parents that the relative advantages of veterinary medicine are good. They must *be* good if increased attendance is to be permanent. Our student attendance must rise and fall with the *relative net advantages* enjoyed by the profession.

MAR 21 '27

Central European Veterinary Research

By H. J. MAGENS, VMC. V. S., Houston, Texas

BEFORE us are several numbers of the *Prager Archiv,* the official publication of the National Society of German Veterinarians in Czecho-Slovakia, the former crownland of Bohemia.

Autohemotherapy

Of general interest is the paper by the Drs. Heger and Kausch on Autohemotherapy. In horses and mules the technic is very simple. A hypodermic needle is inserted into the vena jugularis and a hypodermic syringe filled with this blood is then reinjected into a second needle already subcutaneously inserted in the region of the breast. It is essential that the syringe and needles be thoroughly sterilized, and while working it is best to keep them at body temperature.

In thirteen instances open wounds were treated, 150 cc. of blood were reinjected. Without other treatment complete healing occurred, even in two cases of incised tendon sheaths, within 21 days; a very remarkable result.

It is interesting that Prof. Pardubsky of the State Veterinary College at Brno, who used the above treatment with splendid success in many surgical cases, tried this treatment on a case of periodic ophthalmia with the result that the defects of the eye primarily involved cleared up, whereas the other eye, formerly normal, became affected in such a violent way that heavy destructive changes were left in the wake of the disease.

Foot and Mouth Disease Studies

The fact that the foot-and-mouth disease was discussed at length by Prof. von Ostertag and others in both veterinary sections of the congress of German Scientists and Physicians in Duesseldorf proves the dictum that it is the most important of the epizootics, first due to its great prevalence and widespread occurrence, second due to the difficulties encountered in its control, and lastly due to the enormous financial losses occasioned by it.

A turning point in the study of the disease has been reached. The Institute on the island of Riems under the direction of Waldmann is charged with work on foot-and-mouth disease. Although the causative agent has not been determined as yet, enormously important progress has been made towards ways and means of combating the dreaded plague since the qualities of the virus are better known and the mode of infection and its course as well as certain factors involving immunity has been to a considerable degree worked out. Drs. Waldmann and Ernst of the island of Riems are responsible for much of the progress made. Dr. Waldmann has succeeded in perfecting the immune serum of Loeffler in such a manner that it now takes a definite place with regard to therapeutics employed in the control of the disease. The French discovery of the existence of different types of virus of a primary and secondary nature is all important, as well as the rediscovery of the fact that guinea pigs as experimental animals in this work are a success.

Again interesting is the fact of the selective quality of the virus with regard to certain disinfectants. This marks another turning point in the fight against the dreaded disease.

In Wuertemberg a new method of eradication based on systematic vaccination with Waldmann serum has been tried out with very pleasing results. In most cases not only a rapid and uniform type of the disease was obtained but the authorities managed to keep the spread of the disease through carriers down to a minimum. In many instances the disease was limited to its place of origin even in districts with large traffic in animals. In this Ostertag sees the greatest measure of progress, since heretofore the carrier was the greatest bar-

rier to the successful limitation of outbreaks. Just how true this remark is, all those will realize who have been engaged in the fight against the dreaded disease in this country. The systematic vaccination made it possible to cancel all restrictions of a veterinary police character after only two weeks of observation under quarantine. Markets (public sales) could be held after only three weeks elapsed.

Another eminent speaker, Dr. Muessemey of Berlin, made the theme of his talk: Epidemiology and Veterinary Police Measures against Foot-and-Mouth Disease. The spreading of the disease is rendered very easy through the extreme and surprising infective powers of the virus. The cattle transport mainly, and secondly the dairies, are responsible for this fact, and if one would eliminate the underlying causative factors the eradication problem would be more easily solved. Therefore police measures preventing these factors' influences are to be issued restricting traffic in cattle as well as regulating the dairies and the transport of their products. Just how many difficulties and details have to be overcome to render this quarantine really and truly effective all those will appreciate who had a hand in it during one of the outbreaks in this country where the work is rendered so much more difficult since a stubborn passive resistance of the parties involved the results of the slaughter method, particularly the killing of contact cattle. The financial loss of endemic foot-and-mouth disease in any cattle area would easily run into millions, since it has been proved that the cattle may become infected several times during one year, since the virus is not always typically alike, and it is for this reason that any measures whatever, even the killing, must be regarded as an economical factor. It must be admitted, though, that regulatory and therapeutic measures ought to be constantly improved. With this thought in mind, the serum of the island of Riems of high immunizing qualities must be employed systematically.

The Riems serum is employed as follows:

1. All animals subject to the disease, but especially the cattle are to be infected at once so as to secure a simultaneous and even course of the disease. All cattle are to be subjected to emergency vaccinations immediately, high immune serum to be used. Those not infected are to be treated with a prophylactic or protective dose of the serum.

2. Seven days after diagnosis and confirmation of generalization of the disease in the case of the cows involved, they are to be regarded as healed. Immediately disinfection with a 5% solution of sulphurous acid according to latest researches by Waldmann and Trautwein has to be ordered.

3. After the disinfection of stables and premises has been approved by the state authorities it is permitted:

a) handling of raw milk in the open traffic.

b) release of working cattle for the fields and traffic.

c) shipping, corralling, assembling, etc., of cattle for immediate slaughter at abattoirs, trading pens, railway yards, etc.

4. Fourteen days after the epizootic has had its course, lesions have healed, etc., after disinfection has been carried out in the approved way and has been given credit for by the state authorities restrictions for the farmers are to be lifted if the property involved is not within a quarantine area. If located within a quanantine area then all regulations with regard to moving, export, etc., of cattle are to be rescinded for those cattle which have gone through the course of the disease.

5. If the extent of the infection is limited, protective vaccination of all cattle in the immediate neighborhood in a protective belt area is to be done.

6. All breeding and working cattle found in markets, etc., not of a local origin are to be vaccinated with a dose of the Riems serum at once. All cloven footed stock at shows and auctions to be treated the same way.

This procedure has been tried out in the Province of Eastern Prussia publications and data to be published later.

Dr. Ernst-Schleissheim, another eminent authority on this epizootic, says: "The type of the outbreak and its virulency as well as

the clinical picture of each animal is in proportion to its resisting power. The writer had the occasion to claim and observe this fact in numerous instances during the last outbreak in Texas, especially where the resistance of the hardy native stock was remarkably higher than that of the dairy cows in the same vicinity and pastures. It varies according to age, type, breeding and care of the stock involved. Of highly infectious material, the five-millionth part of a cc. is sufficient for certain infection. Saliva, urine, milk and feces all contain virus.

Spreading of the disease due to high resistance against dessiccation of the virus by wind and stable dust is very probable. The benign type of the virus spreads through traffic of men and beast alike, but in the malignant forms all modes of infection and insulation are known to be effective for the enormous spreading of the virus. Intensive breeding of the virus, the possibility of rapid animal passage in mixed herds of the same and still more so of other species, are directly responsible for the virus becoming of highly virulent character. It is this fact especially which the writer could not emphasize enough during the last Texas outbreak. And after killing the herds and restocking with younger stock, the same factor might have caused a new outbreak. European experiences teach that after every war the disease is always worse, due to lower average age of the livestock involved.

These new findings are at least interesting and we will hope will lead some day to a more economical and less forceful and arbitrary method than the killing of infected and contact cattle.

On other pages of these interesting little booklets are paragraphs showing police restrictions due to foot-and-mouth disease in Poland, where the losses must be enormous and hard to bear for a state in the throes of reconstruction, financial and otherwise.

The horn fiy (Hematobia serrata) was imported from Europe in 1885. It is not possible to estimate the loss due to this pest and like other flies, it is difficult to control.

VETERINARY SURGERY MORE THAN ONE HUNDRED YEARS AGO

By J. D. Harrison, London

The Roaring Operation

DURING my apprenticeship we had a fine young mare, a perfect roarer, and Mr. B. being led to think that an adventitious membrane was formed in the trachea, excised portions of the cartilaginous rings, until he arrived at the source of ailment, which he removed with a scapel, and in three weeks from the operation I rode her. She was perfectly sound and continued so for two years. I daily used her both as a hack and hunter.

Fracture of the Cranium

In the summer of 1816 a pony was brought, laboring under compression of the brain from fracture of the os occipitis. It could just stagger, but was unconscious of surrounding objects; and I several times, by the pressure of my finger upon the depressed portions of bone, made the animal drop as suddenly as if it had been shot. Mr. B. cut down upon it with a scapel, and raised and removed all the fractured portions. Its consciousness then returned and in less than a fortnight the external wound was healed, and the animal at its accustomed work, drawing a milk cart every day into the town.

Comment

The two foregoing articles are taken from *The Veterinarian,* of August 1841. The Mr. B. referred to was Mr. Brettargh, V. S., of Preston, England, with whom Mr. Harrison served his apprenticeship. He does not give the date when the roaring operation was performed, but repeatedly (in other reports) refers to 1816 as being the year he served his apprenticeship, and mentions having subsequently attended school at the Royal Veterinary College in London in 1820, so it may be said that the roaring operation as now performed, was in a measure understood more than 100 years ago, and that the operation as then performed was successful, at least sometimes.

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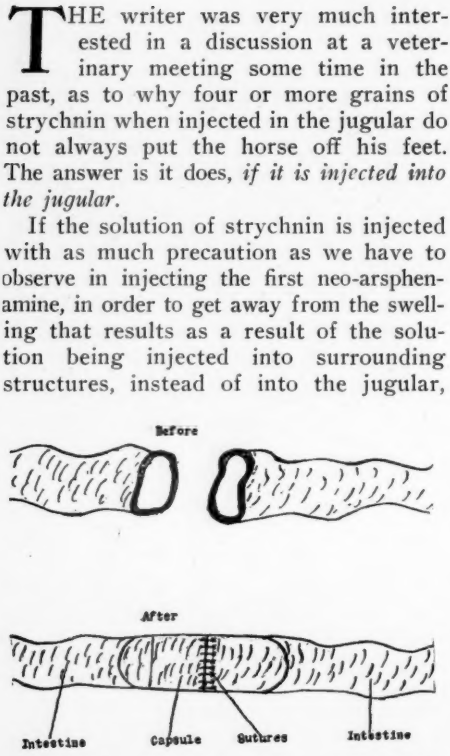
Short Cuts in Practice*

By H. A. BELL, Ottumwa, Iowa

THE writer was very much interested in a discussion at a veterinary meeting some time in the past, as to why four or more grains of strychnin when injected in the jugular do not always put the horse off his feet. The answer is it does, *if it is injected into the jugular.*

If the solution of strychnin is injected with as much precaution as we have to observe in injecting the first neo-arsphenamine, in order to get away from the swelling that results as a result of the solution being injected into surrounding structures, instead of into the jugular, where we are supposed to put it, there is no doubt but what we will get the desired result in one hundred per cent of the cases.



The illustration made from a pen sketch, shows my procedure in intestinal anastomosis in pigs, and can be used in other small animals. Try the method and you will be surprised by its simplicity. Discard the portion of the intestine that has been strangulated, lacerated or befouled, insert a one-ounce capsule into the intestine and sew the edges together over the capsule. It is just as easy as for grandmother to darn a sock with a gourd inside. Leave the capsule within the intestine, of course, and feed only liquid diet for a few days.—J. F. Callison, Moweaqua, Ill.

* Presented at 39th Annual Meeting of the Iowa Veterinary Medical Association, Des Moines, January 18-21, 1927.

I remember the first two cases that I treated with neo-arsphenamine. There is no doubt but what the injection was sub-cutaneous instead of into the jugular, as there was sure a marked local reaction. I overcame this trouble by using a 16 gauge needle two inches long and by backing the blood up in the jugular with one hand I insert the needle with the other. When the needle is in place the blood will run out in a stream then I have an assistant hold the jugular while I attach the syringe and inject the solution and in this way it will be put in the right place always.

Prefers Scissors to Bur for Roaring Operation

In the roaring operation I have been doing some experimenting and it seems to me that the ordinary bur is not severe enough. The first case that I worked on (and worked on is the right term to use) the horse roared as badly three weeks later as before the operation. This horse could not be forced to run more than 50 yards without danger of falling from exhaustion. The second operation on this horse was performed about three weeks after the first and there was not the least adhesion of the cords to the walls. At this time a large pair of compression forceps was used to grasp the cords and a pair of scissors to cut them out or at least three-fourths of them. In another three weeks this horse was put to work on a heavy load with another horse that was sound in wind and he proved to be a fine work horse although he would not quite pass as a sound animal in the sales-ring.

I had the privilege of holding an autopsy on two other roarers on which I had operated several months previously. They did not die as a result of the operation but from other causes. The effects

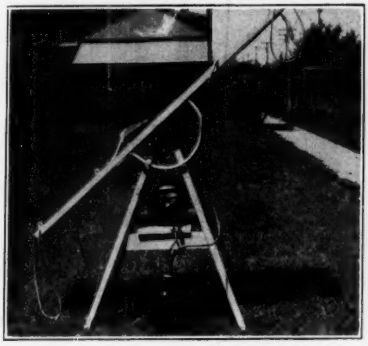
of the bur treatment was not noticeable, but in those cases where the cords had been dissected out there seemed to be nothing to condemn this method of operating. In another case that had been operated on twice for the radical operation and on which I had the privilege of holding an autopsy; the cords were obliterated so completely that I wondered why the animal was still windy, but by examining further I found a growth in the back part of the nostrils which obstructed the passage of the air. A case of mistaken diagnosis.

A Uterus-Retaining Truss

In prolapse of the uterus of the cow, where there is continuous straining after the uterus has been replaced, I find that the parts can be held in place by the use of a truss made by using about 40 feet of three-quarter inch rope. A loop is made in the center to fit over the neck in front of the shoulder by tying a knot to come up snug on top of the shoulder and another in the lumbar region, then

The illustration shows an apparatus for supporting the abdomen of a sow that had a fracture in the lumbar portion of the vertical column. The cart was maintained in position by a light harness. The fracture was completely healed in three months and the cart removed. The sow was afterwards bred and produced eleven living pigs.—R. S. Walden, Lennox, S. Dak.

one just over the tail, another right under the tail, and two or more over the lips of the vulva then the two free ends are passed down between the hind legs and out to each side up to the knot over the lumbar region where the slack is taken up to hold lips of the vulva shut. This may act somewhat as the hippo-lasso does, but if she falls down the rope may be loosed enough to prevent very much distress and although this may keep her down for some time it will be much better than running any risk of having her throw the uterus out again. I have used this method a good many times and it has never failed me.



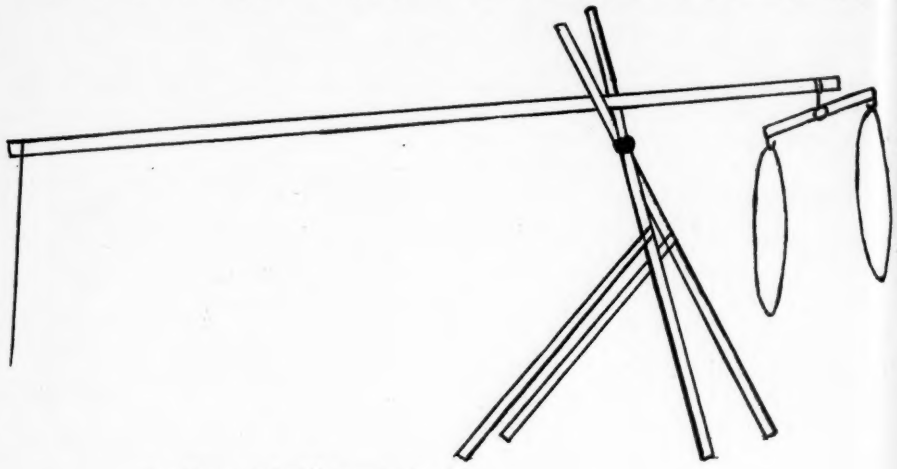
HOME-MADE CHLOROFORMING OUTFIT FOR DOGS

The top is 54x20 inches, with a small strip nailed above both sides and one end. The legs are made like a saw horse, 19 inches long and 30 inches high. There is a piece of flat iron 19x1½ inches screwed to the top and bent over each end with a hole for a screw in each end to be attached to the "horse." A piece of ⅜ inch iron forms a half circle 11 inches in diameter with a flattened place at each end to be screwed to the top. This half circle passes through a loop with a thumb screw on one leg for adjusting.

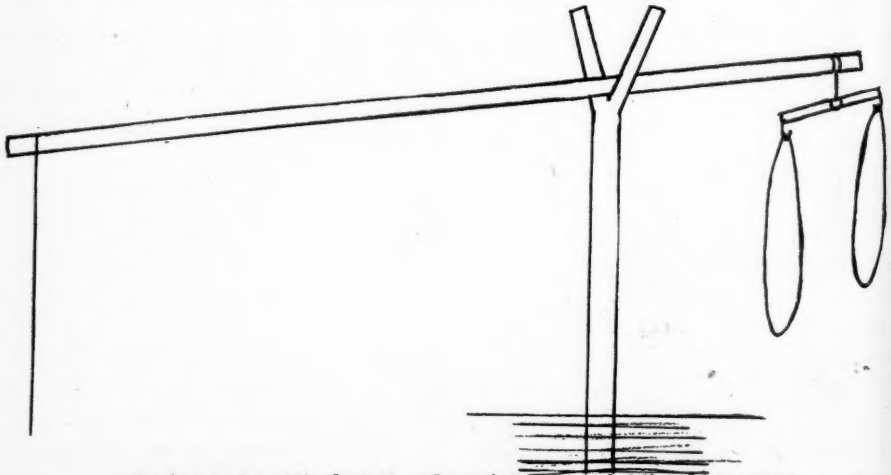
The outfit is used as follows: I fill an acetylene tank with air at a garage.. To this I attach a hose to a tube in a large-neck pint bottle with a rubber cork having two holes through it with two glass tubes, one running to the bottom of the bottle and the other just through the cork. To the tube running to the bottom of the bottle, I attach the tank. The other tube runs to the top of the table and is attached to a leather muzzle which ties over the patient's nose. The pint bottle should contain ample chloroform for one anesthesia. I turn the air on so that there are 70 to 80 bubbles a minute. It takes on the average, twenty minutes to put a dog to sleep without danger whatsoever.—D. M. Lange, Louisville, Ky.

Pyoktannin Blue for Canker

Having had some grief in trying to treat successfully, ear canker in dogs, I will mention a treatment that is proving effective. It is a preparation put up in 4 oz. bottles like liquid shoe polish with a swab to apply it with called pyoktannin blue. It should be used two or three



Device made with crossed poles



Device made with forked pole set in ground like fence post

The above illustrations show a simple method of raising a downer. It is much simpler than a block and tackle and not so likely to be loaned out when you want it. My cases are usually down in a barn or shed with nothing above substantial enough from which to swing a horse. Again, they are out in a pasture where there is nothing to swing them to. In either case, a block and tackle alone is useless. There are nearly always poles or scantlings at hand to make this very satisfactory appliance.

On the average farm, I can rig up this apparatus and have a fallen horse on its feet in an hour, and when I leave, there is none of my equipment on the farm that I need to go back after.

Two ways of constructing the supports are shown, one crossed scantlings chained together, about seven feet from the ground; the other, a forked pole planted like a post.—J. T. Alston, Tupelo, Miss.

times daily, thoroughly saturating the canker with it. It is also very good in other sores and raw places that are slow to heal.

Distemper and Worms

Having had some experience in treating police dogs for distemper it seems to me that this breed, of all breeds is very susceptible to the action of the vaccine or any live culture. The bacterins do not render immunity for any length of time but it is a safe agent to use and if it is used once every two weeks during the winter months or while the pups are young and susceptible to the infection they will get along very well.

Carbon-tetrachlorid in young puppies as a worm treatment is not as dependable as santonin and calomel has been in my experience. The carbon-tetrachlorid is a severe remedy to use and so many of the pups will get off feed and bleach out and soon die, especially if there is the least amount of irritation present in the intestines.

Atropin for Relief of Choke

The first year out of school whenever I was called to treat a choked horse, especially if it was oats or ground feed that caused the disturbance, the bystanders were always ready to suggest how to treat the horse. I tried a number of the suggestions made but the results were not very satisfactory to me, the horse and the owner. The job of washing out the choke with a stomach tube and pump is not a desirable one to say the least. A treatment that has been very successful with me is a hypodermic injection of ¼ gr. of atropin, repeated in 20 minutes, rarely have I had to give the third dose. This is an agreeable way of treating these cases and is doing something for the owner that he can't do for himself. It has proved to be the best treatment that I ever used. However, it has not been just to my liking with cows choked on green apples.

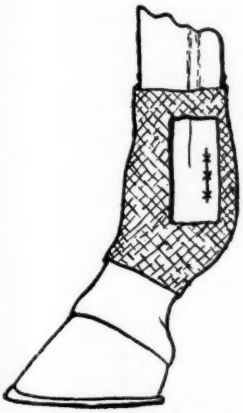


Fig. 1.—Fenestrated Gauze Applied

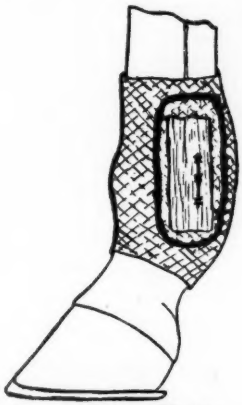


Fig. 2.—Mica Window Pane Adjusted

Fig. 3.—The Window Completed

A transparent dressing for wounds is shown in Figures 1, 2 and 3. The wound is wrapped with a thick gauze, into which a fenestrum has been cut, see Fig. 1.

A piece of mica or celluloid larger than the fenestrum is then laid over the opening and covered with a second piece of gauze, in which a fenestrum is also cut, see Fig. 2.

The whole is then retained by wrapping up the region in such a way as to leave the mica exposed. It not only protects the wound from contamination, but enables the surgeon to observe the healing process without the disturbance incident to frequent removal of the protective dressing.—Lt. Mombert, Merignac, France, in the "Revue Veterinaire."

Easy Method of Relieving Choke on an Apple or Potato

A number of cases of apple choke in cows have been coming my way more or less every year. The plan of cutting the apple up into smaller pieces with a small knife inserted through the esophagus had been a great aid to me. After the apple is cut into small pieces they will be swallowed very readily. One particular case I have in mind was one that had been choked for some time and the apple could not be forced either up or down. She was bloating so fast that something had to be done very soon and, as the only light was a very smoky lantern, I thought it best to put on the hippo-lasso so the work would not be delayed after it had begun. As soon as the apple was sliced up she swallowed it

To stop a horse from halter pulling, take twenty feet of one-inch Manila rope and work a loop in one end over a hondo, if one large enough is obtainable (also called rope eye); pass the rope around the horse's body just back of the forelegs, pass the end through the hondo or eye, forming a snug loop round the body about where the back band of a harness would be. Pass the end of the rope between the forelegs and through a ring in the manger or post three and one-half feet from the ground (do not get too low or too high); pass the end back without tying through the halter ring and tie around the horse's neck with a bow line hitch. Then make the horse pull by shaking a sack or a newspaper in his face. After a few pulls he is through, often never pulling again. Some are more obstinate and require a second or even a third lesson.—S. A. Freeman, Gridley, Calif.

at once and then began to belch and it was high time that she did as the hippo-lasso was aggravating the bloating to the danger point. The incision was made well under to avoid coming in contact with the vessels of that region. About the only after treatment is a liberal application of pine tar every few days.

An Unplanned Rumenotomy

I was forced to perform rumenotomy on a cow in the recent past that was interesting as she had a full paunch of clover hay to commence with and then some moldy corn which started things in great style. It was necessary to insert the trocar and as the injesta would fill the canula as fast as the trocar was removed it was one man's job to take care of it. I had another very urgent call in another part of town so I left with the instructions to keep the canula cleared and the gas coming; but I forgot to tell the owner to keep hold of the canula and not let it get down into the paunch and that is just what happened. In about thirty minutes a call came to hurry back and help find that tube. It was beyond reach so an opening was made large enough to allow my hand and arm to pass in. As my arm was withdrawn the injesta came also, so I pressed down on the side of the cow, as she was down and would not get up, to help the mass run out. After about two bushels of the mass was run out we rolled the animal around on the other side so we could clean up the wound without the injesta interfering. The wound was treated with pine tar and the cow was back to her normal flow of milk in about one week, none the worse for the experience.

A PREDICTION UNFULFILLED

The New York Herald, in March, 1904, in referring to an order for 240 horses placed by Henry Siegel, said: "The order is one of the largest filled by Fiss, Doerr & Carroll since they fitted out the great Barnum and Bailey shows with 300 high class drafters about a year ago. It is one of the most important orders of the year from the fact that it indicates the passing of the automobile for practical purposes in a city where conditions are more favorable than almost anywhere else for the use of motor cars.

This news item was made the subject of an editorial in the American Veterinary Review for April 1904, under the heading of: "The Automobile Discredited by its Friends."

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Bang Bacillus Disease (Bovine Infectious Abortion) Prevention and Control*

By M. F. BARNES and A. L. BRUECKNER, Pennsylvania Bureau of Animal Industry, Harrisburg, Pa.

SUCCESS in the business of breeding and raising cattle for dairy and beef purposes or the business of maintaining cattle for dairy purposes only, is dependent upon many concomitant factors, the chief and most important of which is "health" of the individual members of the breeding or dairy herd. Health of the herd besides being the most important essential to the production of wholesome milk is also the most important essential to both high efficiency in breeding herds and productive dairying. Prevention of diseases is indispensable to a high rate of efficiency in dairy herds and is the "key" to a successful dairy business.

The basic principles for the control of all transmissible diseases are practically the same. The application of the principles of sanitation including disinfection in an attempt to control one disease cannot help but aid in the prevention and control of some other disease or diseases. The best known principles for the control of all transmissible diseases are based on sanitation. All transmissible diseases have a specific cause which is different for each individual disease. All diseases are best controlled by keeping the cause and susceptible animals apart.

Abortion Disease Defined

Bang bacillus disease (bovine infectious abortion) is a specific, acute and chronic, transmissible *disease* which affects cattle of all classes and breeds, cattle of all ages—both male and female. It cannot be caused in the absence of Bang Bacillus, its specific cause. Mature animals are apparently more susceptible than younger animals. There seems to be a relationship between sexual maturity and susceptibility. Pregnant females seem rather highly susceptible. Reacting calves usually cease to react before six months of age. Some, however, react for a longer period and a few react into maturity.

The disease strikes at the heart of the cattle breeding and dairy business, destroys the very nucleus—the calf; and thus defeats the purpose of the breeder. From an economic standpoint it is the most important disease of cattle now prevalent in this country. It greatly interferes with herd efficiency and causes enormous economic loss from the standpoints of dairy and beef production. From a breeding standpoint it interferes with the propagation of certain bloodlines and terminates many families and special lines of breeding.

Probably no other disease is receiving as much serious thought of the wide awake breeder as is Bang bacillus disease. No other disease now prevalent in this country is deserving of as much thought from the standpoint of herd efficiency. No other prevalent disease handicaps so much the improvement of pure breeds of cattle.

Symptoms and Diagnosis

Visible clinical symptoms other than the act of aborting are seldom observed, yet during the onset or in the early stages of the disease in some cases acute clinical symptoms are manifested. Some cows develop swollen joints, rigidity of body muscles and general stiffness along with an elevation of temperature. These symptoms last for only a few days, then subside. Bulls occasionally

* Presented at the Conference of Veterinarians, Univ. of Pa., January 4, 1927.

show hot and painful swellings of the scrotum including a testicle and spermatic cord which causes lameness and interferes with locomotion. During the acute stage of these symptoms the temperature is elevated and the agglutination titer of the blood runs very high.

In arriving at a diagnosis from a clinical standpoint, the history is very important of consideration. The first occurrence of infectious abortion in a herd is usually traceable to the addition of cattle to the herd or exposure to infected animals in some other way. Any agency which serves as a means of bringing B. abortus Bang in live form and susceptible animals together may be considered a source of infection. Therefore, in the control from the standpoint of prevention, ones aims should be to keep the cause and susceptible animals apart.

While the disease can usually be diagnosed with considerable degree of accuracy from a clinical standpoint through the observance of the herd manifestations; much time is wasted in waiting for these manifestations to be presented and much damage has often been done which could have been prevented had more accurate methods of diagnosis been resorted to.

The only positive proof of the presence of this disease in a herd is obtained by finding Bang bacillus or by applying specific blood tests to the blood of the animals in the herd.

The average dairyman does not have the proper conception of the term, contagious abortion, which is the term under which he knows the disease caused by Bacillus abortus Bang. He considers any premature delivery of a calf as abortion and is very prone to consider them accidental. If he does consider these abortions frequent enough in occurrence to convince him that the trouble is contagious he usually does not understand that there is any more to the disease than the manifestation of this symptom.

Years ago, many persons were of the opinion that abortions were due to witchery, evil spirits, climatic conditions, smells, fright, etc. There are still a few dairymen who would attribute abortions to mysterious causes, although since the discovery of a specific cause this view has been almost abandoned, and most breeders and dairymen concede that the cause is transmitted from one animal to another. The more thoroughly they understand this fact in connection with the economic feature, the more successful will be the attempts on the part of veterinarians to assist them in prevention, control and eradication.

The act of aborting is probably the most important clinical manifestation at least from the standpoint of the amount of damage done to surrounding members of the herd. This symptom may occur without noticeable warning but is usually preceded by swelling and slight reddening of the vulva, swelling of the back part of the udder and occasionally a slight discharge through the vulva. Dick has described the appearance of flakes in the milk of lactating cows a day or two previous to the occurrence of the abortion.

The first abortion usually occurs in the first gestation period (or part of gestation period) after a cow has become infected although some cows do not actually abort until they have gone over two or three periods. Most infected cows, however, if they continue to conceive, abort some time during the course of the disease, approximately 40% abort the second time, a number abort the third and fourth times and a few the fifth and sixth.

Due to the fact that animals infected with Bang bacillus manifest known visible clinical symptoms only at certain times during the course of the disease accurate clinical diagnosis is impossible on individual animals, although when many factors are considered jointly one can be quite certain of the disease in a herd.

The disease is manifested differently in different herds. 100% of the animals in a herd have been known to abort in a single year and very few aborted the next year. If the disease is permitted to run its course, which may require three to four years, 75 to 80% or more of the mature females in the herd will eventually have aborted, and a percentage will have become sterile.

A certain percentage of sterility occurs in almost all large herds but a high percentage usually indicates Bang bacillus infection in the herd. Retained placenta likewise occur in all herds and should be looked upon as a possible indication of infection with Bang bacillus rather than as a specific symptom. Granular vaginitis is the cause of a high percentage of temporary sterility in some herds. It occurs in herds that are free from Bang bacillus and therefore bears no relation to bovine infectious abortion.

Control and Elimination

Control and elimination may be classified into:

1. Apparent
2. Actual

Apparent Control is not control at all. The nature of the disease is such that when it is more or less quiescent for a period it appears that some change which has been made in the method of feeding or handling the herd has furnished a means of controlling the disease. This nature of the disease has furnished false and insecure proof of merit in drugs and concoctions when used in the treatment of diseased animals. It furnishes a basis of income for venders of fake remedies sold with the guarantee that the price per dose will be refunded for each cow that aborts after the treatment has been administered.

All methods wherein attempts are not made to eliminate Bang bacillus from the herd and construct barriers against its introduction can be classed in the apparent control group. This includes doing nothing at all to the use of so-called cures and the use of bacterins and vaccines. The employment of such measures has in many instances been the cause of a delay in the application of proper methods and undoubtedly, by creating a feeling of false security, has been the cause of much spread of the disease.

The widely advertised Bowman abortion remedy for which 100% claims were made and which was shown by analysis to consist of about 85% brown sugar and 15% wheat bran, has been placed on the list of misbranded products as the result of a trial before the U. S. District court in Cleveland, Ohio, May 5th. Those who testified in behalf of United States were sufficient in number to represent the consensus of scientific opinion and were practically unanimous in expression of the opinion that on account of the nature of this disease and the tissues the organism must attack in causing an abortion, it is impossible to effect a cure by feeding materials by the mouth.

Commercial interests seem rather prone to quote statements made by investigators as a means of advertising their products whether the statements bear any relation to the products or not. In these quotations the meaning of the author of the article is likely to be misconstrued. An example is apparently demonstrated in a pamphlet entitled, "The Cost of Abortion." Quotations are taken from a bulletin of the Storrs Agricultural Experiment Station. The authors of the bulletin apparently try to show and do show the justification of non-reactors to the abortion blood test over reactors. The bulletin considers three losses and states:

"These three losses among the reactors; namely, income from product, cow depreciation and calves, amounted to a total of $7,745.28 for the eleven-year period, or $44.01 per year for each infected cow."

The following is quoted from the pamphlet: *"HOW CAN THIS LOSS BE CONTROLLED?"* By having your veterinarian vaccinate all non-pregnant females with Pitman-Moore Abortion Vaccine."

The bulletin shows that fifty-nine reacting cows brought an average per cow of $35.26 less than 37 non-reactors, yet the pamphlet would depreciate the value of all non-pregnant females by injecting living culture vaccine and causing all such animals to react.

Several agricultural papers should be highly commended for the step they have taken within the last couple of years of refusing to advertise so-called abortion cures. This undoubtedly has saved a number of breeders considerable sums as well as preventing spread of the disease through false security.

Actual Control is a means of determination of and elimination of disease and diseased animals and the practice of recognized methods necessary for the safeguarding of the herd.

Prevention practiced in conjunction with the practice of sanitary principles constitutes the best known and most profitable method of handling this disease. The disease can be prevented and eradicated from herds through repeated blood testing, elimination of reactors and the practice of preventive measures.

The Pennsylvania Plan

The Pennsylvania Plan has been successfully carried out during the last six years and its feasibility need no longer be doubted, yet many breeders have not been sold to it. The plan with essentials necessary in carrying it out has been published in Bulletin 404 of the Pennsylvania Department of Agriculture and is also available in pamphlet form which makes its reproduction here unnecessary. It is voluntary on the part of the owner but is available to all Pennsylvania breeders who wish to advantage by it. It is hoped that those who are to discuss this subject at this meeting through their practical experiences will thoroughly discuss favorably or unfavorably as they see fit, the feasibility, or practicability of this plan in the prevention, control and elimination of abortion from their herds. We believe that the execution of its principles constitutes the only successful method of control and elimination of this disease which has been produced up to this time. We hope that some person will devise a simpler method requiring less perseverance.

Some breeders claim to have valuable animals of merit, yet claim they cannot afford to separate the diseased from healthy animals. We believe there are no breeders who have valuable assets which they cannot afford to protect.

Some breeders who have been carrying out the plan have gone to other states and purchased a number of animals subject to the abortion blood test and have added them to the herd in compliance with the requirements of the plan without any bad consequences. A point in the plan which seems hard to get veterinarians and breeders to understand is that pregnant animals must not be added until after having calved and having passed a blood test at least two weeks subsequent to calving.

The number of herds operating under the plan has been gradually increasing ever since its beginning. A herd must have been negative to the blood test for a period of at least one year before receiving a certificate "Abortion Free." Up to the present time approximately twenty-five herds have received certificates and a number of others will soon qualify. Testing is being done in approximately 450 herds.

The plan is carried out cooperatively by the herd owner, his veterinarian and the Pennsylvania Bureau of Animal Industry. The Bureau insists that the veterinarian cooperate in this work at the owner's expense for the reason that the veterinarian is qualified or can qualify more readily than any person who does not have veterinary training. The work belongs in his field. The owner is the chief benefactor and should bear the expense.

There has been a tendency for extension organizations to advocate this work but up to the present time the Bureau has carried out work in cooperation with veterinarians only. The present demand indicates that veterinarians should become more familiar with the workings of the plan.

Several inquiries have been received from breed societies, calf clubs and bull associations which indicates keen interest on the part of these organizations.

In approximately one dozen abortions which have occurred in negative herds we have been unable to demonstrate definitely the cause of these abortions. In none of these cases could Bang bacillus be demonstrated through a study of the placenta and aborted fetus and none of the animals reacted to the blood test. In no case where animals remained negative to the blood test subsequent to the abortion have we ever been able to demonstrate Bang bacillus as the cause of the abortion.

Concluding Remarks

During the last few years, bovine infectious abortion has apparently become more prevalent throughout the United States. This can be attributed to several causes. The extensive use of living culture vaccine in some sections has undoubtedly been the cause of some spread of the disease. The extensive tuberculosis eradication campaign has caused the restocking of a number of herds which in many instances has been done without the use of precautionary measures against other diseases.

Veterinarians are confronted, almost every day, with opportunities to use their influence in establishing herds on a healthy basis. Many herds are completely wiped out on account of tuberculosis and the tuberculin test. Why not re-establish these herds free from *abortion* as well as tuberculosis?

In establishing herds it should be remembered that the percentage of young stock infected with Bang bacillus disease, tuberculosis and other diseases is much lower than in other classes and young stock can usually be purchased much cheaper than mature animals. In a period of a couple of years they can be grown into a mature herd.

Four years ago a herd of twelve heifer calves all from abortion reacting dams, were purchased and separated from abortion infected herds. They formed the foundation stock of a herd now certified "abortion free." Most of them have given birth to the second calf and none of them have reacted to repeated abortion blood tests since they were six months of age.

In very badly abortion infected herds having passed through a scourge of the disease and now in a quiescent state and wherein the Pennsylvania Plan does not seem feasible, the plan of separating the young stock to grow them to maturity as an abortion free herd could in many instances be advantageously carried out.

Breeders of today can render the future livestock industry no greater service than can be rendered by taking steps to place the future industry on a healthy basis tending towards higher efficiency, and thus, on a solid foundation.

VETERINARY CONFERENCE UNIVERSITY OF PENNSYLVANIA

The conference was opened January 4th by a small animal clinic. Dr. Wm. J. Lentz in charge. A morning clinic is held at the school each week day, and Dr. Lentz had made an effort to pick or hold over some especially interesting cases.

Hysterectony

One of the cases was a white poodle that had been at the clinic a few days before with a vaginal discharge. It seemed evident that the uterus was involved, so the case was brought back for operation. Laparotomy was performed and it was found that the discharge was occasioned by four dead puppies about full grown.

Antrum Abscess

Another case that many showed interest in was a white poodle with a history of chronic fistula under the eye. Diagnosis, diseased antrum. Treatment recommended: Removal of the second molar for drainage. Dr. Lentz explained that the removal of this molar in a young sound dog is no child's play. It is much simpler in the case of an old dog, but, however, it is the surgical thing to do.

A Siamese cat was also brought in, and was the object of much interest to most of the veterinarians present, as we understand there are very few of this species in this country.

Adams' Technic for Roaring Operation

Dr. Wm. J. Lee of the veterinary school read a paper on The Roaring Operation as Perfected by Dr. John W. Adams. This was a commendable and fitting tribute, since unfortunately those who did not know Dr. Adams personally had no true knowledge of his surgical skill and his perfection of this operation to almost the ideal. Dr. Adams never made any claim for the refinements which he introduced and which excelled any and all of the refinements made in the operation since the olden days when it was thought necessary to remove the thyroid cartilege and almost brutally mutilate the larynx.

Dr. Lee also described a case of torsion of the uterus that Dr. Adams had operated

on by making an incision in the left side and so rotating the fetus.

Treatment for Ringworm

Dr. V. G. Kimball of the veterinary school exhibited a spleen of a horse that had died of tuberculosis, the spleen being enormously enlarged. He also gave a case report of ringworm in a donkey which yielded rather promptly to treatment, contrary to the general belief, the areas being first washed with green soap and then painted daily for several days with crude oil and later with tincture of iodin.

Vitamins in Nutrition

Dr. J. H. Jones, Department of Chemistry of the Medical School, gave a fine talk on the feeding of vitamins, reviewing the subject rather thoroughly and pointed out that five kinds of vitamins are now recognized: A, B, C, D and E.

A anti-xerophthalmic
B anti-beri beri
C anti-scorbutic
D anti-rachitic
E affecting reproduction

B and C are not important in domestic animals, but the doctor showed slides depicting chickens that had been deprived of some of the other vitamins or of sunlight or of both and the influence of these agencies or nutrients were plainly evident.

Dr. L. A. Klein, in discussing Dr. Jones' lecture, brought to the attention of the audience that while a milk cow is *per se* not in need of the anti-scorbutic vitamins, still in order that her milk shall be fit for baby food she must have these vitamins or the results would be visited on the child.

Cecal Obstruction

Dr. V. G. Kimball also reported an interesting case of impaction of the cecum of a horse. The horse had received cathartics and colic mixtures, also high enemas given by lowering the front parts decidedly and pumping in warm water slowly. Very satisfactory catharsis was established and still the horse died in a few days, showing that catharsis may be established and the impaction of the cecum not benefited.

Infectious Abortion

Infectious Abortion Control was the subject of a paper presented by Dr. M. F. Barnes and Dr. A. L. Brueckner, Pennsylvania B. of A. I. This was an excellent summary of both work and data that the authors had prepared, stressing the practical side of control both in diagnosis and segregation. This paper with the discussion that followed by Drs. Ezra Duebler, Ernest Duebler, V. A. Moore, H. R. Church and J. H. McNeil was of such merit as to convince any reasonable person, either stock owner or veterinarian, that progress is being made as rapidly with this disease as has been made with most other contagious diseases, notwithstanding it is much more complex than tuberculosis. This paper is published elsewhere in this issue. By all means read it.

Presentation of Adams' Portrait

The presentation of the portrait of Dr. John W. Adams by Mr. G. M. Leighow, president of the Veterinary Medical Society of the University of Pennsylvania, and address of acceptance by Dr. Josiah H. Penniman, president of the university, occasioned a period of deep reverence for one of the ablest and most lovable characters that has ever graced the veterinary profession, and every word uttered by either president or student gave unmistakable evidence of the admiration and respect which the entire university held for this man, who bound to him as with links of steel the hearts of his fellowmen.

Vesicular Stomatitis

In the evening Dr. W. E. Cotton, of the U. S. Department of Agriculture Experiment Station at Bethesda, Md., discussed Vesicular Stomatitis, with particular reference to the recent outbreak in New Jersey. It would seem that this malady has become a very positive added burden; its similarity to foot-and-mouth disease in some cases making a differential diagnosis impossible excepting by inoculation of horse or mule. Dr. J. H. McNeil reviewed hurriedly some of the salient clinical characteristics of the disease and its subtle appearance at distant points. Veterinarians in cattle districts will need to watch out until we feel reasonably secure again.

Following Dr. Cotton, Dr. E. T. Hallman,

of the Michigan Agricultural College, gave an address on the Gross Pathology of the Fetal Membranes of the Cow. Dr. Hallman had some fine charts which helped materially in explaining his address and so robbed it a good bit of the intricate phase that pathology necessarily must have for the practitioner whose daily life has little to do with histological structure. We regard this work of Dr. Hallman's as a splendid undertaking toward the unraveling of a pathological condition that is daily growing in importance in the cattle industry.

Ambulatory Clinic

The second day, Dr. C. J. Marshall, acting as chairman, gave an ambulatory clinic demonstration, or rather his students did. Mr. R. S. Moore of the senior class gave a talk and demonstration on Udder and Teat Operations, Mr. A. S. VanSant on Periods of Pregnancy in Cow; having several uteri, some of which were non-gravid and others ranging in pregnancy from six weeks to around six months.

Symptomatology of the Ovary by Mr. L. A. Peterson was practical and educative; in fact, the demonstrations and talks the boys gave was one of the most interesting things we have ever attended, presented in a plain, unaffected way, and their specimens were prepared to a nicety.

Poultry Practice

Following this there was a demonstration of Dosing Poultry for Parasites by Dr. Robert O. Biltz of the Pennsylvania B. of A. I. and Bleeding Poultry for White Diarrhea by Dr. H. W. Herriott, also of the Pennsylvania B. of A. I. The former dosed the poultry with rather a small, long tube through which the vermifuge was passed direct into the gizzard. Both this and the bleeding were done with such a nice dexterity as to make one feel proud of the operators. Dr. B. K. McInnis of South Carolina and Dr. J. P. Turner of Washington and others warmly complimented the students. Dr. McInnis, who has been a member of the A. V. M. A. more than fifty years is the oldest veterinary practitioner in South Carolina, exhibited a caponizing outfit of but three pieces and used is with the dexterity of a Will Rogers with a lasso.

The afternoon session was taken up with a discussion of The Care and Treatment of Ducks by Dr. J. M. Hendrickson of Poultry Diseases Laboratory, Farmingdale, L. I., and The Relation of Avian Tuberculosis to the Tuberculosis Control Problem by Dr. A. F. Schalk of the North Dakota Agricultural College. These men are experts on the subjects they discussed, and since both these papers are to be presented at other meetings and later published, we will leave this pleasure to others to report.

Goshen, N. Y. J. F. De Vine.

Texas Veterinarians Hold Profitable Meeting

The semi-annual meeting of the Texas Veterinary Medical Association was held in San Antonio January 19th and 20th.

After a preliminary business session A. T. Kinsley conducted a round table discussion covering a wide range of subjects in practice, surgery and sanitation.

Dr. J. E. Gibson, inspector in charge of tuberculosis eradication in Indiana, delivered a splendid address in which he gave the essential factors that must be given consideration in this important problem. The value of tuberculosis accredited areas to the cattle industry was illustrated by the fact that the New England states alone annually sold approximately 70,000 dairy cows for slaughter and that an approximate equal number must be obtained to supply the demands for milk and its products.

Poisonous Snakes and Treatment of Their Bites was ably discussed by Col. M. L. Crimmins, U. S. A. (retired). In this discussion, the Colonel gave very interesting facts relative to the classification of snakes and the minimum lethal dose of venom for man, dog and horse. The Colonel also demonstrated the effect of venom on a dog and further showed the value of suction by means of a breast pump on recently inflicted wounds and finally demonstrated the technic of restraining a five-foot diamond rattler while he extracted the venom.

Dr. J. G. Horning of Houston was not

present but his paper "European Veterinary Conditions" was of interest as it depicted present veterinary conditions in several European countries. The Doctor's subject matter was illustrated by snapshots. It was evident that Dr. Horning had a very interesting and instructive trip abroad.

Professional Intolerance was presented by Dudley Jackson, D. V. M., M. D. The doctor appealed to the veterinary profession to cooperate with public health officials in the important problem of insuring a clean wholesome milk supply and the control of tuberculosis, rabies, anthrax and other diseases communicable from animals to man.

Dr. E. K. Glover of Kansas City, Mo., read a splendid paper on the Practical Elimination of Parasites from Small Animals. Many points of interest were brought in this paper and it was freely discussed by many veterinarians from different parts of the state.

Capt. W. C. Griffin of Ft. Sam Houston, gave some very interesting facts on the cause and treatment of Running Fits in Dogs. This paper was followed by a rather lengthy discussion but apparently without any positive conclusions.

Bacillary White Diarrhea Accreditation was discussed by Dr. T. O. Booth, assistant state veterinarian. The doctor briefly described the technic of the agglutination test and urged the practitioner to become more interested in poultry practice. From the discussion that followed it is evident that unless practicing veterinarians cooperate with the sanitary commission in the control of poultry diseases other than veterinarians will attempt to do this control work.

The second day of the meeting was devoted to clinic and other demonstrations at the veterinary station hospital, at Ft. Sam Houston and was directed by Col. R. J. Stancliff. The collection of blood samples from chickens was demonstrated by Dr. A. B. Young. Col. Stancliff discussed six different formulas that are used in the veterinary station hospital as follows:

1.

Compound Benzoin Ointment

Boric acid	4 oz.
Zinc oxid	4 oz.
Salcylic acid	2 dr.
Petrolatum	16 oz.
Comp. tincture benzoin	2 oz.

The boric acid, zinc oxid, salcylic acid and petrolatum are mixed up into a smooth ointment, to which is added the compound tincture of benzoin, which is incorporated by thorough mixing.

2.

Black Oil

Acid, sulphuric U. S. P.	1 oz.
Oil, tar	4 oz.
Oil, turpentine	20 oz.
Oil, linseed	20 oz.

Place the turpentine in a large container, in a cold water bath, and add the sulphuric acid slowly, stirring as added. The chemical reaction is great and although there is no danger of explosion in an open vessel the mixing should be done out of doors as the fumes are quite strong. After the compound has cooled which usually requires several hours, the linseed oil and oil, tar is added. The final preparation will not separate out and has no caustic action on the most delicate wounds.

3.

Blister

Red iodid of mercury	1 oz.
Petrolatum	4 oz.

4.

Normal Saline Solution, U. S. P.

Sodium chlorid	131 gr.
Water	1 qt.

5.

Alcoholic Solution of Bi-Chlorid of Mercury

Bichlorid of mercury	10 Gms.
Alcohol	250 C. C.
Water	250 C. C.

6.

Picric acid (saturated sol.)

Picric acid	3 drams
Water	1 qt.

After which a series of different cases in horses and mules were presented.

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There were several cases of puncture wounds, superficial bruises, lacerated and contused wounds, open joints, laminitis, dental disorders, sprains and burns, presented and the various lines of treatment discussed. The roaring operation was demonstrated by Capt. Grannle. The Captain also exhibited and discussed the various types of horses and present day problems of breeding.

The X-ray was demonstrated by Lt. Brower and he gave a comprehensive discussion concerning the value of X-rays to the practitioners.

The intradermal tuberculin test was demonstrated by Dr. Williamson of the state sanitary commission, after which the entire association was provided with a splendid and satisfying luncheon in the Station Hospital.

The Hospital and Veterinary Station Laboratory were visited and enjoyed by all and the program was closed by a demonstration of forage classification.

The social features of this meeting consisted of an original Mexican lunch and an evening banquet.

A. T. Kinsley.

Sows Down in Hind Quarters

I have two sows that have gone down in their hind legs. These sows have weaned pigs, have been bred about thirty days, are in good condition, and are being fed corn and fish meal. They are kept in a low, wet pasture, but have dry sleeping quarters. The trouble begins with wabbly gait; in a day or two they cannot walk. They make attempts to get up, but cannot stand.

There are so many causes of sows going down like this that I am at a loss to determine the causative factor. Could it be due to the low, wet pasture? What would you suggest as a remedy and preventive?— W. B. M., N. C.

Reply: It is probable that the condition you have described is a dietary deficiency due primarily to an insufficient amount of phosphorous and calcium. It may be that the feeds provided for these sows were deficient in calcium and phosphorus or if present they were not in the proper combination for assimilation. Lactation drains the reserve of calcium and phosphate and these sows according to the history given had both raised litters of pigs. It therefore appears probable that they are affected with osteomalacia, a condition due to a deficiency of assimilation of calcium and phosphorus.

The treatment would consist of providing these deficient elements in the form of calcium phosphate or bone meal. See pages 73 to 77, February issue of VETERINARY MEDICINE for further details as to the feeding of bone meal. It will be found that codliver oil in the proportion of two drams twice daily per hundred pound weight will be of value in promoting the assimilation of the minerals.

VETERINARY MEDICINE is pleased to be of service to veterinarians by answering inquiries or giving information. A. T. K.

Brucella abortus infection in the human is probably more common than is ordinarily suspected. Thus Hull and Black report an agglutination reaction in dilutions of 1 to 200 in 5 of 69 blood samples of human origin.

A typhoid epidemic was reported by the Michigan Department of Health in which 35 people of 250 that attended a church dinner became affected, and six died. The epidemic was attributed to squash prepared by a typhoid carrier.

Horse flies (Tabanidæ) are very prevalent in some areas, and they do considerable damage. According to Tadder of Florida, powdered resin, two pounds, laundry soap, two pounds, fish oil, two pints, oil of tar, two pints, and kerosene, three pints make a fairly good repellant. —Exp. Stat. Rec. 55, No. 9.

Carbon tetrachlorid is effective in the destruction of liver flukes in sheep and cattle. According to Norris one dose sufficies and it is not necessary to fast animals before administering the medicament.

Recent Investigational Work of Interest to Veterinarians*

The nationwide bovine tuberculosis eradication project is the biggest sanitary problem ever undertaken in the history of mankind. We should view it in a big way. The problem of tuberculosis control and prevention is as old as civilization. It is a problem of both man and domestic animals. It affects man economically, socially and even his existence.

A great deal of the reduction in the death rate in man from tuberculosis is probably due to modern sanitary measures. However, a further portion is due perhaps to some acquired immunity obtained by more or less constant exposure to sub-minimal dosage of the human and possibly other types of the tuberculosis organism.

Perhaps ninety-eight per cent of the investigational work with regard to tuberculosis has been done within the last sixty years notwithstanding the disease was recognized long before the dawn of the Christian Era. The year 1917 marks one of the most important epochs in the history of the world so far as this disease is concerned.

The spending of millions of dollars necessitated by the tuberculosis project commenced in 1917 has stimulated investigational work greatly. A few years ago we thought that the eradication of bovine tuberculosis would eradicate tuberculosis from swine also. We know now that this is not true. So far as local lesions are concerned, the pig is as good a test animal for avian tuberculosis as the chicken or turkey. Eating a single infected dropping from infected fowl may in a considerable percentage of cases infect swine. If a litter of pigs eat a single carcass of a chicken infected with tuberculosis 80 per cent to 85 per cent of them may become infected with avian tuberculosis.

To help popularize the tuberculosis eradication project the large packers have agreed to give 10 cents a hundred pounds above the market price for hogs from areas in which bovine tuberculosis has been shown by test to affect less than one-half of one per cent of the cattle. It was thought when this offer was made by the packers that tuberculosis in swine was due chiefly to the presence of the disease in cattle on the same premises. The saving to the packers in the number of hogs condemned for tuberculosis from such premises has amounted to less than half the 10 cent premium. This is because of the widespread prevalence of avian tuberculosis among swine.

Because an insufficient amount of investigational work was done before we began the tuberculosis eradication project we now have to go back to the farmer who has cleaned up his herd and tell him we were wrong and that it is now necessary for him to eradicate the disease from his poultry if he would avoid a large economic loss as a result of tuberculosis.

Avian tuberculosis has spread with astonishing rapidity in the northern section of the Midwestern states. There are districts in North and South Dakota, Iowa, Nebraska, Wisconsin, Minnesota and Michigan where 80 per cent of the flocks are infected and yet we saw our first case of this disease in a chicken in North Dakota in 1907. In the far eastern and in southern states the infection is as yet light.

Avian Tubercule Bacillus Nonpathogenic for Cattle

At the North Dakota Experiment Station we built what we term a cage lot, an ordinary lot with the whole enclosed with fine wire netting. Into this cage we placed 72 infected chickens, 100 sparrows, 100 pigeons, 7 calves and 1 colt, and run them together from May to October, about five

* Excerpts from address by A. F. Schalk, Fargo, North Dakota, delivered before the Wisconsin State Veterinary Association, Madison, Wisconsin, Jan. 24-26, 1927.

months. This experiment was repeated on three succeeding summers, using varying numbers of calves. The results were the same for all seasons.

Tuberculosis was not materially increased among the pigeons or sparrows. None of the mammals showed lesions of tuberculosis on autopsy nor ever reacted to bovine tuberculin. Most of them were sensitized to and would react to avian tuberculin within a short period after being put into the cage lot. They lost this sensitiveness to avian tuberculin in from one to five months after removal from the cage lot and ceased to react to avian tuberculin. Most of those used in a second experiment acquired sensitization to avian tuberculin a second time just as readily as new animals.

We scarified an area on the neck of calves and rubbed a hundredth of a milligram of avian tuberculosis culture over this surface very gently using the finger. It caused them to react to avian tuberculin in 60 days, but caused no reaction to bovine tuberculin, nor were any lesions developed. The sensitization faded and the reactions ceased within four months. It would appear that a cow with a slight abrasion on the skin would, from lying upon highly infected droppings from diseased chickens, probably be sensitized sufficiently to react to avian tuberculin.

No evidence was adduced that some of the no-lesion cases in cattle, which react to mammalian tuberculin, are due to avian sensitization or avian infection.

Avian Tubercule Bacillus Readily Infects Chickens and Swine

Non-reacting chickens and swine put into this cage-lot after the infected birds had been out of it for six months contracted the disease, showing that the germs of avian tuberculosis are not destroyed by a Dakota winter.

Rats and mice cannot be infected with avian tuberculosis, but they appear to be mechanical carriers of the disease and promptly infected healthy birds when allowed to go from a pen containing infected birds to one some distance away containing non-infected birds.

At the Minnesota Experiment Station, Dr. C. P. Fitch and co-workers examined more than 800 eggs from more than 100 tuberculous hens and found fewer than 1 per cent of them infected. And in a large number of chickens hatched from eggs from tuberculous hens not a single case of infection was found. Apparently we may disregard the egg as a means of spreading avian tuberculosis.

Chickens rarely contract tuberculosis before the age of five months from living with infected birds. After they are seven months of age they acquire the disease more rapidly.

The Montana Live Stock Sanitary Board found a heavy infection of the human type of tuberculosis organisms in hogs that were fed on garbage from a tuberculosis sanitarium. This indicates that swine tuberculosis is not entirely confined to bovine and avian types of the organism.

Infectious Abortion

The work now under way at the Wisconsin Experiment Station to determine the effect of nutritional factors on abortion disease in cattle is a timely project. Although a tremendous amount of research work is being done on this disease, no one has made a systematic study of this specific phase of the problem. I personally consider it well worthy of special investigation along with other phases of the subject.

According to Dr. Graves of the dairy division of the Department of Agriculture, some very encouraging results have been obtained in restoring some sterile cattle to physiologic reproduction by the feeding of sprouted oats. This treatment is in accordance with the vitamin E theory as shown by Dr. Evans in his studies on sterility in white rats. The sterility in these cases is evidently due to resorption of the implanted fertilized ovum. Just how often this type of sterility occurs in cattle is as yet problematical. However, it might be advisable for practicing veterinarians to keep this in mind when treating certain types of sterility, the cause of which cannot be determined.

Sweet Clover Hay Poisoning

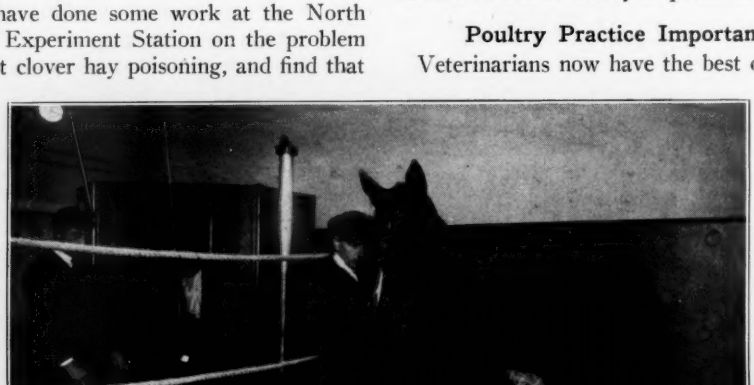
Sweet clover hay poisoning has been reported from 11 states and several provinces in Canada. It appears to be due to moldy or partially spoiled sweet clover hay, and has been reported only in cattle. It is characterized by enormous hemorrhages under the skin or under the mucus membrane; the animal often bleeding to death into its own tissues.

We have done some work at the North Dakota Experiment Station on the problem of sweet clover hay poisoning, and find that the moldy hay varies greatly in its toxic properties. Some specimens did not harm cattle fed on it for several weeks, while other samples caused fatal hemorrhage in calves within 18 days.

Sometimes very large hemorrhages occur subcutaneously and by taking the animal off the toxic hay it may recover, the extravasated blood in some cases being absorbed in a few days. Sometimes a small hemorrhage no larger than the end of one's finger will occur in the brain. Such hemorrhages are fatal. If the bleeding has not gone beyond physiologic limits, a large number of cases can be saved by transfusion of one to one and a half liters of freshly defibrinated normal cattle blood or blood serum. The practising veterinarian can readily carry out this treatment under farm conditions with a couple of two quart jars, a stirring rod, some sterile gauze, a small funnel, with about four feet of rubber tubing and a couple of 14 or 16 gauge needles. Of course the work should be carried out as cleanly as possible.

Poultry Practice Important

Veterinarians now have the best opportunity they have ever had to get into poultry practice, but they must grasp this opportunity or lose it. If veterinarians do not do this work others will preempt the field and do it less efficiently. The work of Beach of the Wisconsin Station and Hall of the Zoological Division of the B. A. I. in the investigation of kamala for tapeworms in chickens was mighty good work. However, I urge veterinarians to give this material as well as some other remedies with a stomach tube—a human catheter or a glass tube—depositing them directly into the gizzard. It is the most efficient way to give them.



Taking an X-ray in an up-to-date Veterinary Hospital in Berlin

Food for the Dog—Sick or Well

By G. W. BROWNING, Mobile, Ala.

FOR years I have been alluding to food poisoning when on the subject of disease. I shall endeavor to show that the animal body can be poisoned from pure, wholesome food, as well as impure food and that the state of the body may cause innoxious foods and secretions to become noxious.

How much digestive and assimilative power the body has will perhaps always remain a secret. An individual may look hungry and weak, yet his digestion may be in a state of suspension; he may have no power to assimilate, and if this is true feeding him will push him farther away from health.

Pain Inhibits Digestion

Pain or discomfort of any kind, either physical or mental, causes a suspension of digestion; and when food fails to digest it takes on fermentation; the acid is taken up and causes overstimulation of the nervous system. The gas caused by the fermentation causes distention of the bowels and displacement of various organs; constipation is common; sluggishness of the liver, heart palpitation and asthmatic cough may next appear; hence a train of morbid symptoms may follow eating when food should be avoided.

How many diet charts warn you not to feed the patient when sick or feeling bad? How many veterinarians prescribe letting the patient go without food when feeling bad? Is it not a fact that the rule among veterinarians is to prescribe food for the dog when feeling bad for the purpose of keeping up its strength?

Feeding in Fever

Feeding in fever is the cause of needless mortality. Unless feeding, superfluous nursing and too much medicating are practiced, severe types of sickness will seldom be seen; black tongue will be shorn of three-fourths of its death dealing power; distemper with its 60 to 70 percent mortality will be robbed of most of its lethal influence, except the types that terminate in pneumonia or the nervous form, so-called "fright disease." These types are very fatal. There is no question but that feeding in fever cases, or in any acute or chronic disease, intensifies, prolongs and complicates them.

The universal fear that the sick dog may starve to death causes the veterinarian to demand food. One of the most successful fee-faw-fums, worked off on prospective clients of mine for the past few years, has been: "If you go to Browning, he will starve your dog to death." This works with those who do no thinking for themselves.

Does Fasting Cure Disease?

Curing disease means the correcting of physiological perversion, and where the perversion has been of a character to cause organic degeneration the degenerative changes will be so great that death is in the line of least resistance; then efforts to cure will fail, for it is too late.

It should not be forgotten that bodily resistance means enough nerve energy to overcome or resist all disease influences, and the real key to any cure is the conserving and building of nerve energy. The wise veterinarian will know that to feed a patient, that is unable to dispose of the food, is equivalent to taxing the nervous system—is forcing the body to use up nerve energy in freeing itself of waste products; and if the waste is not carried out of the system the patient not only becomes enervated, but the retained debris poisons the fluids of the body, and through this overstimulation more nerve prostration is incurred.

The theory that fasting depletes, and that, if patients are fed good, nourishing food, the nervous system will be built up and given resistance to overcome the depressing influences of disease is plausible, but the

more the facts are sought out and examined into the less excuse there will be for the existence of such an assumption.

Why Do Dogs Get Sick?

If food will restore and impart strength to those dogs that are sick, will someone who advocates feeding the sick, tell us why they got sick in the first place? The sick previous to their breakdown ate heartily enough; few, if any, had ever missed a meal up to their illness. The history of all sick dogs—those who have chronic diseases as well as those who have acute diseases—is that they had a good appetite, and had been eating heartily up to the time of their illness. If eating good, nourishing food will keep up the strength of the sick dog, how did such dogs happen to lose their strength? The answer that will be given is that they were infected by germs.

Cause of Enervation

Excess in all lines brings enervation; enervation causes sluggish functioning and, as a result, there is a lack of secretions, as well as excretions. A retention of excretions causes the constitutional state I call "autotoxemia," the universal underlying cause of all disease. When excess has brought on this state, glandular involvement follows. If the stasis is of the liver, black tongue will develop, or, if of the lungs, acute pneumonia, or perhaps pleuro-pneumonia; and if stuffing is continued other pathological conditions too numerous to mention will be given an opportunity to develop.

Proteid Foods

All works on diet have much to say about proteid, so much that it inclines to generate the impression that the body must be given a certain amount daily or it will go to ruin. The proteid foods are not superior to all others, except that they contain a larger variety of the primary elements, and for this reason would be ideal for use when a monodiet is used.

Cause and Treatment of Neurosis of the Stomach

When stomach neurosis begins to manifest itself, the cause should be removed by cutting out practically all starchy foods, such as white potatoes, rice and grits. Grits and potatoes is the route over which more dogs' stomachs have been ruined than any other. Liver, cakes and ice cream are leading causes.

As the dog must eat for bulk sufficient to distend the stomach comfortably, when he has so eaten only cooked starchy foods he has more starch than the secretions can care for; hence fermentation and putrefaction of food, then troubles on *ad infinitum*.

In neurosis of the stomach, and allied dyspeptic conditions the animal should be fasted for at least 48 hours, in some cases 72 hours, and in extreme cases 120 hours, and nothing but cool fresh water allowed during this period. When we see the stomach is sufficiently rested to hold and digest food, for the first twenty-four hours he should be fed three times a day, first mutton broth or chicken broth, or grade A raw milk. On the second day he can be put on a diet of raw meat, cut up very fine, and by the third day he can be put on boiled meat plain, without any seasoning and in a rather rare condition.

Diet for the Well Dog

We should discard all high percent starchy food, and some of the indigestible proteids. The dog is a carniverous or meat-eating animal; this cannot be denied. Consequently fifty percent of his daily ration should be meat, not pork nor fried meats, but boiled meat with an occasional bone to gnaw. Bones supply his system with the badly needed minerals that is usually kept from him by his owner, such as calcium and phosphorus, etc. However, the dog in his domesticated state should not be fed an exclusive diet of meat nor an exclusive diet of cooked food. Reasoning on this some years ago, I have been using a raw cereal and mineral food, as follows: One part of wheat bran, one part of rolled oats, one part of soy bean meal, and half a part of a good grade of bone meal, and for growing puppies a little charcoal is added. This should be the morning feed and boiled meat his night feed. This raw

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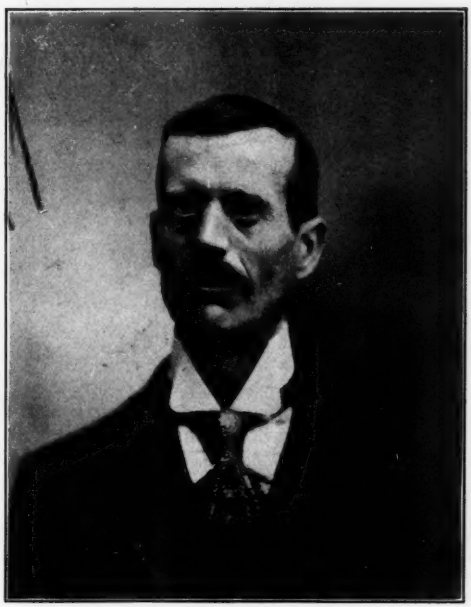
diet should be fed in pans and wet up with raw milk or mutton or beef broth, but it should never be made sloppy.

These cases of gastralgia and neurosis of the stomach of the dog have become so numerous in my practice for the past three years that it has worried me no little, not so much that I did not know the cause, but the trouble I have with my clients, by improper feeding after the patient is discharged from the hospital in good condition.

A Case of Black Tongue

Two-year-old pointer, female, presented for treatment, December 22, 1924, with the history of having several fits or fright disease a month previous to coming to the hospital for treatment, but said she had not had any fits lately. I made the best physical examination I could at the time for distemper, etc., but, being in a hurry to make an outside call, threw her in a large well-ventilated stall, set a pan of water in the stall, and made my call. In a couple of hours I returned and made a more thorough examination and decided on one thing. She had one of the worst cases of black tongue I had ever seen, and I told the owner that the outlook was very dark. That I didn't see how I could save her. He began to talk about forced feeding, which I had had so much of lately, with so much disgust that I told him short off to take his dog to the veterinarian that believed in force feeding, as I did not believe in it and would not do it, and didn't want the case. He replied by saying, "Well, you cured my six weeks' old puppy about two months ago, when you said you didn't think you could save it, so go ahead and have your way and treat this one, and I won't interfere any more."

Treatment.—I fasted her for five days, with echinacea and piper methysticum, Lloyd's, three times a day. On the morning of December 27th offered her some sweet milk, about four ounces. She lapped it up and seemed hungry for more. At noon she was given one-half pint milk; at night another half pint was given. I watched her very close to see if she vomited it up, but she didn't. The second day she was given a small amount of raw meat cut up fine three times during the day. From then on she was put on a diet of stewed lamb, a small amount three times a day. On December 31st she was discharged as all right with a good appetite and as well as ever after being in the hospital for nine days. With a fast of five days in the hospital and two days she didn't eat before coming to the hospital made seven days in all without eating, and she is not starved to death yet.



DR. G. W. BROWNING
Mobile, Ala.

The single injection rabies vaccination of dogs is gaining in favor as evidenced by the many compulsory vaccination ordinances and laws that are being enacted in the various cities and states. Of over 100,000 dogs that were vaccinated with the single injection method in Tokio and Yokohama from 1919 to 1924, only 41 developed rabies and of over 300,000 dogs unvaccinated, 16,991 developed rabies during the same period.

SPECIFIC INFECTIOUS CYSTITIS AND PYELONEPHRITIS OF COWS

By F. S. Jones, V. M. D., and Ralph B. Little, V. M. D., Department of Animal Pathology of the Rockefeller Institute for Medical Research, Princeton, N. J.

In Vol. XIII, No. 5, of the Journal of Experimental Medicine, the authors discuss what appears to be the first recognition of this disease in America, although a similar affection has been recognized in Continental Europe since 1888, and is wide spread there at the present time.

A record of nineteen cases and twelve autopsies are given, together with several tables. The following excerpts give a general view of the subject.

The Appearance of Pyelonephritis in New Jersey

In October, 1924, our attention was called to a cow affected with nephritis. At the owner's request the cow was autopsied. Lesions of pyelonephritis were noted, and a diphtheroid was isolated from the kidney. A more detailed report of the pathological findings will be given later. It was possible to obtain a relatively complete history of importations into this herd during the past few years, and in addition, a record had been kept of the deaths and the autopsy findings. In November, 1922, a number of cows were purchased in the Middle West. The first loss from nephritis occurred in April, 1923. Another cow died in May, 1923. During 1924 two cows died of the disease, one in July and the other in August. We autopsied a severe case October 27, 1924. Since then other cases have been recognized.

A larger herd in which the practice is to introduce a large number of cows each year has been under observation by various members of the staff for a considerable period. Infections of the kidney were known to exist; in two instances in which bacteriological examinations had been made *Bacillus pyogenes* was obtained. Inasmuch as there had been several importations during 1922 from the same district as that referred to in the smaller herd, search was instituted for such infections in the larger herd. On November 9, 1924, a cow (No. 1138) was found dead. Bacteriological examination of the kidneys revealed an organism similar to that obtained from the case mentioned. Between November, 1924, and May, 1925, twenty such infections have been recognized.

Summary of Clinical and Pathological Findings

The cows presented no marked symptoms. The temperature was always within normal limits. Some of the cows were thin but others were in good flesh. A considerable number were admirable dairy types and continued to produce a large quantity of milk until slaughtered.

The most noticeable symptom is the condition of the urine. Attention is frequently drawn to the frequency with which urine is voided. As a rule in the early cases the urine is turbid and the sediment on microscopic examination reveals red cells and leucocytes. Later it is blood-stained and frequently contains blood clots. Usually the cows strain considerably after urination and are apt to pass bright red blood in small quantities.

The lesions may be confined to the bladder, or, in addition, one or both kidneys may be involved. Thickening of the ureter leading from the affected kidney may be pronounced. The bladder is usually contracted. The walls are from 1 to 3 cm. thick. The mucous membrane is edematous and thrown into broad folds. Its color varies from pink to scarlet. In certain cases the mucous layer is covered or replaced by a grayish white, adherent exudate. The affected kidney is enlarged and often firm. It is mottled from gray to red. The pelvic space may be contracted and filled with a thick yellow mass of exudate. The walls of the larger collecting tubules are greatly thickened.

The bacilli are always present in the urinary sediment in large numbers. Suitable preparations from the pelvis of an involved kidney reveal them in equally large numbers.

We have been able to autopsy 13 cases in all.

In a limited number both kidneys were involved, but we have observed involvement in a single kidney in two instances. Evidence exists in certain cases that the pelvis is the first portion of the kidney invaded by the organisms. Here they are found in large numbers, whereas visibly involved portions of the cortex are often sterile when cultured. Involvement of the kidney was always associated with a thickening of the corresponding ureter. In one instance the walls of both ureters were appreciably thickened but the kidneys failed to show lesions. The bladder changes are most characteristic of the disease and occur in all cases. We infer from this evidence that the disease is an ascending infection, the organisms gaining entrance to the bladder and by a process of growth finally reaching the pelvis of the kidney. The organism is not one usually associated with vaginal or uterine infections. In fact, in only a single case did we find uterine lesions. Of the 20 cows from which it was possible to obtain a record, 14 calved normally and six aborted.

It was hoped that by means of some biological tests, we would be enabled to recognize infections relatively early. With this in view a number of experiments were undertaken. Though only negative results were obtained, mention of some of the more important ones seems advisable. We attempted to ascertain whether agglutinins for the diphtheroid organism were present in greater concentration in the blood of infected animals than in those known to be free from the disease. The titers were about the same in both groups. Introduction of filtered culture fluid into and beneath the skin and on the cornea failed to result in recognizable reactions. At this time we feel justified in asserting that the only specific diagnosis available consists in the microscopic examination of urinary sediment for the characteristic bacilli.

As already stated several have commented on the appearance of the disease after parturition. Of 19 cases in which statistics were available, 7 were recognized during the first 3 months following parturition, 8 occurred from the 4th to the 6th month thereafter, and 4 from the 7th to the 14th month. It is evident that the disease may occur at any time following parturition. However, statistics of such a nature are liable to mislead since the disease is of long standing in many cases and may not be recognized until the processes are well advanced. On the whole the evidence points to specific infection of the urinary tract independent, in the main, of other abnormalities of the genital tract. This view is strengthened by many bacteriological examinations of the exudates from uterine infections, vaginal secretions, etc. Occasionally diphtheroids of similar character may be met with, but usually only in small numbers.

It is obvious that the specific cystitis and pyelonephritis here described may be of considerable economic importance. It is well recognized as the cause of considerable losses among cows in Europe. Such an infection can become well established within a herd before its presence is known. Although the protocols would appear to show that the actual loss is small, it must be borne in mind that many of our cases were slaughtered relatively early in the course of the disease. The record of the small herd within which clinical cases were retained shows the existence of a considerable mortality.

Summary

A specific infection of the urinary tract associated with a diphtheroid has been encountered in cows from three dairy herds. The most characteristic symptom is the frequent passage of turbid or blood-stained urine. The bladder was always found to be involved. The bladder walls were thickened, the mucosa swollen and reddened. Patches of exudate adherent to the bladder mucosa were frequently observed. In certain instances one or both ureters were thickened. In other cases one or both kidneys were involved. The kidney process seemed to originate in the pelvis and extend toward the medulla and cortex. The characteristic bacilli were always found in large numbers in the urinary sediment and the pelves of involved kidneys.

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QUESTIONS ABOUT MILK FEVER

1. It is almost unknown for a first calf cow to suffer from milk fever, yet on the second calving she may do so, although the same animal may give more milk during the first lactation period than the second. Such cases have occurred to my own knowledge.

2. Why do antepartum cases of milk fever occur, although at the time the animal is not lactating?

3. Why is it that a cow giving practically the same quantity and quality of milk at each lactation period may suffer from milk fever after one parturition and not after another?

4. Why all cows which are heavy milkers do not contract milk fever?

5. Why is it that cows in the middle of a lactation period may develop a condition exactly similar to milk fever and which condition responds to the treatment applied for this disease?

6. Why does a cow suffering from milk fever respond more quickly when the udder is inflated with oxygen than with air, or when oxygen is injected subcutaneously and the udder not interfered with?

7. Why are there many more cases of the disease and is the mortality much greater during some seasons than others—for instance, during 1924?

All clinicians must have met, at some time or other, with cases of milk fever where the animal partially responds to the orthodox treatment of mammary inflation. The response may be sufficient to cause the patient to regain consciousness if comatose and to regain, more or less, the normal recumbent position, yet not sufficient to cause further progress. Several hours later this kind of case will again relapse into a semi-comatose condition and further mammary inflations are useless. The animal may remain in the condition for several days, when death supervenes. Post-mortem examination on cases of this kind constantly reveals the liver in a condition of fatty degeneration. This pathological lesion explains the failure of the animal to respond to treatment. The diseased liver is unable to accomplish its function of synthetising its glycogen—if any is present—into glucose, thereby failing to restore glucose to the already depleted blood.

From the knowledge at present at our disposal regarding the pathological changes brought about by hypoglycæmia, it would appear that the clinical symptoms exhibited are not caused by the absence of the normal amount of glucose from the blood, but rather by an excessive hydration of the protein particles of the blood. This hydration can be overcome by any good dehydrator, such as the intravenous injection of glucose or the subcutaneous injection of oxygen. In fact, the latter has been found to be quite as good as the former, which proves that it is incorrect to say that glucose acts by restoring to the blood the sugar which was driven away by the causative factor which was responsible for the condition of hypoglycæmia.—L. C. Maguire, F. R. C. V. S., in the *Veterinary Record*.

Ocular filariosis in chickens has received little attention in recent years. Is it possible that the filaria mansoni is of some consequence in the occurrence of the ocular lesions of roup or so-called epitheloma contagiosum?

Coccidiosis in chickens is becoming widespread. This disease is responsible for losses of from 25 to 50 percent of infected flocks. The common source of infection is contaminated soil and the disease is therefore most effectively controlled by placing chicks immediately after hatching on virgin soil away from mature birds. The use of milk and intestinal antiseptics is of value in controlling the disease in infected flocks.

A pamphlet, "Horse versus Truck in Milk Delivery," published by the Horse Association of America, 822 Exchange Ave., Chicago, contains much valuable information and should be read by every veterinarian in America.